

Volume 77 Number 3  
March 2009

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# Amateur Radio

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## Our Cover this month

### WIA reviews the ICOM IC-92AD

Waterproof, 2 m & 70 cm, D-STAR, in a dual band 5 W handheld transceiver – what more do you need? GPS? World Wide Coverage? Done! The cover picture shows the IC-92AD and optional HM-175GPS, with the display in "dual watch" mode. Photo by Peter Freeman VK3KAI

**See the full story on page 27**

### Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

### Back Issues

Back issues are available directly from the WIA National

Office (until stocks are exhausted), at \$8.00 each (including postage within Australia) to members.

### Photostat copies

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### Disclaimer

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## Editorial

Peter Freeman VK3KAI

## Our country

As I write this Editorial, I note that the news media for the past week or two has been full of stories about a couple of the natural features of our climate – floods and fires.

In the tropical regions to the north, we see that "The Wet" has well and truly arrived. Ingham and surrounding regions are experiencing floods, with the likelihood of further rains to come.

In the south, Victoria has had scorching temperatures and raging bushfires.

Whilst I personally have not been directly impacted, the local area has suffered from two major fires.

### The Gippsland fires – some comments from early on

Much of the following account is based on some comments that I posted to the vk-vhf email reflector on Monday 9 February. I sent the account as I had received some telephone calls and emails enquiring if all was OK. Why were the questions being asked of me? An arsonist started a fire on the south-eastern

edge of my home town of Churchill at around midday on the Saturday. At the time, the temperatures were in the mid 40s and there was a strong gusty wind from the north-east. The local ABC radio station had been giving updates of the spread of the "Bunyip Ridge" fire complex well to my west – that fire had started a day or two earlier and was now spreading fast.

I decided to send this response to a message from one of my regular 2 m contacts from Canberra to the reflector, to give others an update on the local situation in Churchill.

All is OK here – the fire started near the SE corner of the town of Churchill, but out of town. The strong NW winds drove it rapidly to the south and SE. It certainly looked spectacular from my

town. The fire rapidly spread to the SE, spreading through the native forests and heading toward Balook. The situation was made worse by the smoke plume blowing in from the fires around Bunyip Ridge, which was rapidly spreading towards Drouin and Warragul. By about 1700, lights were needed inside the house, because of the smoke plume from the NW.

The intensity was high, driven by high winds. The fire spotted to the south of the Stzrelecki range, and started fires in the region near Yarram – particularly at Devon North.

Around 1700 the wind changed direction – around to from W & SW. That drove the fire to the east, into Jeeralang North, Jeeralang, Jumbuk, Koornalla, Le Roy, Callignee and places beyond – close to Gormandale.

From what I have heard to date, most amateurs in the region are OK. There are some that we do not hear from often – I guess that time will tell.

Ralph VK3WRE and others who work locally for BAE Systems have been very busy all weekend – tending to RF systems, installing extra repeaters for the emergency services and such like. Yesterday Ralph was taken to Mt Tassie by helicopter to check on things. He checked all that he could and then had time to repair the 146.800 Mt Tassie repeater. Ralph's comment last night was that the ground was burnt to within 1 m of the cabinet housing

the repeater. The local "Channel 10" TV station was also restored. All the transmitters on the Broadcast Australia (BA) site at the summit compound are all off air – no mains power and the backup generator was significantly damaged by the fires. (The BA site is the major regional transmitter site, with

continued on page 5

# The WIA and callsigns

Before May 2004 the WIA had been advised formally by the Australian Communications Authority, the ACA, later to become one of the agencies to form the Australian Communications and Media Authority, ACMA, that it was intended that the provision of amateur examinations would be subject to open tender.

For us it started in May of 2004.

It was only a couple of weeks after the WIA had adopted a new Constitution that created an entirely different organisation from the federal body, composed of state and territory organisations, that the ACA published its Outcomes of the Review of Amateur Service Regulation, the Outcomes.

The Outcomes referred to a proposal published in its original Discussion Paper as follows:

*The discussion paper offered the possibility for an amateur registration body (ARB) to manage amateur examinations, certificates and callsigns (and, if class licensing were to proceed, station location information).*

Comment was made on the submissions received on this topic as follows:

*The majority of submissions that commented on the possible outsourcing of administrative matters were in favour of the suggestion and considered that any outsourced functions should be handled by a non-profit organisation.*

The conclusion of the Outcomes was:

*The ACA has decided to proceed with the outsourcing of amateur certificates and callsign management. Outsourcing the issue of certificates is consistent with the recommendation made in the Productivity Commission's Radiocommunications Inquiry Report that the ACA delegate the conferring of certificates of proficiency for amateurs.*

From then, the management of examinations and the issue of certificates of proficiency, very logically linked together, were also linked to what was vaguely called callsign management.

What was the WIA's position? Let me

quote from the formal statutory report of the Directors for the year ending 31 December 2006, sent to all members in March 2007.

*The retention of the right to manage amateur examinations is of critical importance to the Institute. If it loses that right, a substantial resource, including the resource of so many people who have been qualified as WIA Assessors will be lost, and a significant cash flow will disappear, and the ability of the Institute to employ adequate staff will be seriously diminished.*

Our focus was the examinations. It was also said in that Report:

*The Institute has been told that it is intended to proceed with the proposal that a single body would be sought to manage amateur examinations, certificates and callsigns. The Institute has made extensive representations that its role of examination management should be made secure, given the investment of so many in the new system.*

On 15 October 2007 ACMA published its Request for Expressions of Interest in providing certain functions for the amateur service, including the management of amateur examinations, the issue of certificates of proficiency and certain administrative functions in relation to call signs. It was not structured to provide an opportunity to seek to provide only part of the three services; it required the management of examinations, certificates of proficiency and callsigns. It required all Expressions of Interest to be lodged by 8 November 2007. The Institute lodged its Expression of Interest by 8 November 2007. On 7 February 2008 the Institute was advised that it had been selected by ACMA to manage amateur examinations and to provide certain Amateur licensing functions and services to the Amateur community on ACMA's behalf.

In short, the WIA's position has always been that it was better for an amateur organisation to continue to manage the examination system, and this was particularly so since 2005 when it adopted

a completely new system with the help of a dedicated amateur who also conducted a Registered Training Organisation and the many who qualified as Assessors and later as Learning Facilitators, to meet the requirements of the new licence and practical examination requirements introduced in October 2005.

And if callsigns had to be part of what the WIA did, well, so be it.

We now know what is meant by "callsign management".

In another part of this issue of AR, the new system for the administration of amateur callsigns, which comes into effect from 2 March 2009, is described.

In short, ACMA will not issue an amateur callsign, or change a callsign unless a Callsign Recommendation from the WIA is produced.

It does not matter if you are happy to have the next available callsign, or want to choose a callsign, (what the Americans call a "Vanity Call") or even want a two letter callsign in Victoria, New South Wales or Queensland, you will have to have a WIA Callsign Recommendation.

We know that many people do want a "Vanity Call" and we have tried very hard to set a system that better meets the needs of those people.

We will have a place on the WIA website where everyone can see what callsigns are available at any given time. Yes, you can look at the ACMA website and the Register of Radiocommunications Licences and see if a callsign is allocated. But that does not tell you if it is available. It may have been held by a deceased amateur and is still embargoed in the two years after it expired, or that the ACMA has placed an administrative bar for a particular call sign.

I hope that you will see that we have tried to make the system as fair and open as possible, even establishing a short period in which errors can be detected and rectified.

We have set up a special system that we hope will be fair to all to deal with two letter callsigns from the states where

*continued next page*

## WIA announces 2009 AGM and weekend of activities

The Wireless Institute of Australia is pleased to announce the 2009 Annual General Meeting and "GippsTech – Special Edition" the WIAAGM weekend of activities for 2009.

The annual GippsTech conference, held each year in July, has earned a well deserved reputation as the premier technical conference bringing together hundreds of VHF, UHF and SHF enthusiasts from right around Australia.

The 2009 WIA AGM weekend of activities is called "GippsTech – Special Edition" and will bring together some of the very best speakers from GippsTech conferences to this special event. Participants who register for the weekend activities will be able to attend a range of fascinating and highly informative radio related technical presentations by some of Australia's leading technical presenters, on a range of topics extending beyond the traditional GippsTech focus. The weekend of activities kicks off on Friday evening the 1st May 2009 at the Gippsland Campus of Monash University.

The formal WIAAGM will commence at 2 pm Saturday afternoon 2nd May 2009 at the University and will be

followed by the Open Forum, where members will be able to hear reports on a range of WIA activities and provide feedback. The formal Notice of Meeting and Annual Reports are with this issue of Amateur Radio.

The WIA annual dinner will follow the Open Forum. The dinner is to be held in the ballroom of the Century Inn on the Princes Highway at Traralgon. As usual, the evening will include a mystery guest speaker!

The weekend will also offer a range of relaxing social activities, local tours and sightseeing for partners who would prefer an alternative to attending the technical conference.

## ACMA/WIA Sign Contract for WIA Management of Certain Amateur Licensing Functions

On 28 January 2009, Australian Communications and Media Authority (ACMA) Chairman Chris Chapman signed a Deed between ACMA and the Wireless Institute of Australia (WIA). The Deed sets out the conditions under which the WIA will manage amateur examinations, the issue of certificates of proficiency and callsign recommendations for the next five or (at the WIA's option) 10 years.

From Monday 2 February 2009, the WIA will issue amateur certificates of proficiency, in addition to conducting amateur examinations (including special examinations).

## WIA issues new Assessment Instructions

On 29 January the WIA announced that the Deed between it and ACMA had been signed, and so since 2 February only the WIA will issue certificates of proficiency for qualifications achieved on and after that date.

This has made necessary a very complete revision of the Assessment Instructions, the basic document of the WIA Exam Service, which sets out the methods that must be followed in all WIA amateur assessments.

A particular focus has been to minimise the number of times the same information has to be written of different forms by candidates and Assessors. A number of ambiguities have been removed and the obligations of all involved to observe

the privacy legislation have been made clear.

A hard copy of the revised Assessment Instructions has been posted to every WIA Assessor and Learning Facilitator, and the new forms will be included in every Exam Pack prepared.

A copy of the Assessment Instructions can be found on the WIA website, and the new forms can also be downloaded from the site.

"I would like to thank the many people who contributed to this review of the Assessment Instructions, particularly Fred Swainston, Peter Young, Robert Broomhead and Ron Bertrand. I do hope that everyone using it will find that this revision is easy to understand and that the process for recording essential information is easier to manage" said WIA President, Michael Owen VK3KI.

## WICEN assists in Victorian fires

On 9 February 2009 WICEN Victoria Secretary Mark Dods VK3XMU reported that WICEN had been activated to assist in the tragic bushfires that have caused so much devastation and loss of life in Victoria.

WICEN appealed for additional operators for the bushfires, and received an unprecedented response. Very quickly they had sufficient operators available to staff the likely tasks ahead.

Mark Dods said on 11 February that it appeared that WICEN's role in this emergency was going to be a long, hard marathon over an extended period."

As this edition of AR goes to press WICEN is rotating operators in operating positions in Alexandra (main emergency services base), three operators, and Narbethong, four operators. In Alexandra, three operators are providing operators for the Country Fire Authority (CFA) and the Department of Sustainability and Environment (DSE) networks. At Narbethong, four operators are providing communications on amateur spectrum on HF (80 metres) and VHF (6 metres) for the Murrindindi Shire Council in disaster recovery operations.

Current weather forecasts suggest that WICEN may have a further week of providing assistance, rotating volunteers to minimise the impact on individuals.

## WIA Comment

*continued from previous page*

likely demand exceeds supply. As time goes on, two letter callsigns in the more populous states will only become available through an existing licensee not renewing a licence or it being cancelled.

I have no doubt there will be glitches, and things we will have to improve.

I know that some people will be unhappy that this task is not left with ACMA but is being undertaken by the WIA. But please consider this: if ACMA was determined that callsign management was to be outsourced (and it was) and that a single body to manage exams, issue certificates and manage callsigns would be given those functions, is it better that it be done by the amateur body or by a commercial organisation?

# Our Country

## Editorial

continued from page 2

ABC Radio and TV, SBS, Seven and WIN (Nine) networks all originating from the site.)

Ken VK3ALA at Jindivik lost the shed that housed his shack, but had most of the radios in the car. The shed contained "a lot of memorabilia". He lost all the hay he had recently purchased, some other sheds and also a stallion. The houses are basically OK (he has two houses in the area). The West Gippsland UHF repeater will have been lost - it was in Ken's shed. The Jindivik area was impacted by the spread of the Bunyip Ridge fire.

The fire went close to the QTH of John VK3ZRZ (Traralgon South), but his house and all the family are OK. Henk VK3CAQ (not very active over the last couple of years) had a very tense weekend - the roads to his location were cut, as was power. He and his partner had planned to stay and fight, but the fire did not end up too close - probably about a kilometre away.

I am sure that more news will come out in the coming days. My thoughts are with all that may be impacted by these fires - I am sure that there will be many in other areas of Victoria.

Further afield, I can report that Fred Swainston VK3DAC, the WIA RTO principal, is on watch at his property near Healesville - fire came within 500 m before a wind change. He is still on alert.

I am not sure about Doug VK3UM - the Kinglake fire was threatening Glenburn from the west and the Murrindindi fire was close to Doug's location according to the Saturday fire map. I tried to ring Doug this morning, but it sounds as if the local exchange is out of action. The DSE map of the Kinglake complex this morning has the burnt area as very close to where Doug is located, if not around it.

Amateurs have been active with RECOM, assisting the Red Cross with registration records of those evacuated. One of the RECOM operators is Rob VK3EK, who was busy most of the weekend with the registration traffic.

WICEN Vic was activated late yesterday to assist with communications at Kinglake and Alexandra.

Other amateurs have also been

busy through their associations with other community based organisations, including CFA, SES and Ambulance Victoria. I will not try to start listing them as I am sure I am only aware of some of the individuals at present.

All of this comes after having the Delburn complex fires close to my SW - that fire came to the edge of Yinnar, only 8 km away. In that fire, Stan VK3PSR at Boolarra lost some sheds, tanks, pumps and irrigation pipes and a car. His house was saved.

During the fight of the Delburn complex, the CFA set up its operations centre at the University campus here in Churchill - in the car park that we use for GippsTech. Things have been unusually busy at the University all last week, and will continue to be so for a while longer. The onsite catering firm has been providing up to 650 meals a day for fire-fighters and associated emergency services staff.

It has been an interesting week or so, to say the least!

Thanks to all for your thoughts for everyone impacted by and/or involved in any manner with these fires.

I am sure that there will be more assistance required as the pictures become clearer over the coming days with the various fires.

Cheers,  
Peter VK3KAI"

Now that more details have become available, we are all aware that the fires mentioned above have had devastating impacts on property and lives. In addition, there were several other fires started on the same hot, dry windy Saturday.

I was wondering about one particular friend, not an amateur, as he and his family live in Callignee, south of Traralgon. The fire destroyed 57 out of 61 houses in Callignee! My questions were answered during the News coverage on Monday night - they were on camera at the Traralgon Evacuation Centre. The people were safe, but the house is gone!

## News of other amateurs

Early on the afternoon of Tuesday 10 February, this report was distributed by Doug Friend VK4OE, again on the vk-hvh reflector.

I have just spoken to Bev and Doug McArthur on the telephone, being the first landline call they have received in

four days due to local phone services being down. For those who are not aware, the severely affected towns of Kinglake and Strathewen are really only over one heavily timbered range to the South from them, and Marysville is only about 2 km away in the same valley.

Doug and Bev are fine but very tired due to minimal sleep, and all their sheds and equipment are still intact, but that is even amazing because of the amount of ash and other hot/flaming debris that has bombarded their area recently. Doug has been manning fire tankers and Bev has been assisting with local UHF CB communications. Doug inspected his big shed just recently and everything inside is covered with grey ash.

Doug appreciated my call and wanted me to post this message, reminding everyone that he and his community are not yet out of danger. Visibility there is presently only around 50 metres as there has been a wind change and another fire front is now approaching from the South, originating in country already burned in the last few days! Whether it comes past their place is presently beyond the realms of prediction.

I assured Doug that the thoughts of many of us are with him and the many other people affected by the recent events.

Very best wishes,  
Doug Friend VK4OE,  
Brisbane.

The fires are continuing to burn, with crews working hard to bring them under control. The media have reported new instances of arson in the north-east of Victoria. WICEN Victoria has been active in providing communication support primarily to municipal operations as recovery efforts commence, from what I have seen to date.

Given the huge areas impacted by these fires, other amateurs are likely to have been directly impacted. I am sure that all amateurs extend their best wishes to all such amateurs, as well as to all others who have suffered from both fire and flood.

At least one amateur repeater in the north-east has been impacted. As I noted above, my local club has also lost a repeater - VK3RWD. There is the potential that individual amateurs may have lost everything, including their homes.

continued on page 11



# Assembling and operating the Elecraft K3 transceiver

Chris Meagher VK2LCD

The Elecraft company in California USA, relative newcomers to the ham radio market, provide a range of kit-built gear. Now they have added a world-class rig to their line-up – the K3 all-mode DSP no-solder kit transceiver, for HF and 6 metres.

When the Heathkit company made its last kit transceiver in the 1960s, it seemed like the curtain-call for ham kit-built rigs. With the introduction of integrated circuits and then surface mount components, one might have thought that any kit with up-to-date features and performance would be too complex and expensive to find a niche in the amateur market.

There were a number of successful designs and kits produced in the US for QRP and backpacker CW operators, like the OHR400 and Sierra transceivers; but an all-mode, all HF, full featured portable rig, kit-built – surely not? But it was to be surely yes, with the release of the Elecraft K2 transceiver at the 1998 Dayton Hamvention. Marketed with the slogan “I can’t believe it’s a kit”, this compact transceiver offers modern circuitry and function in a small, rugged, no-nonsense package. Rated almost universally at 5/5 on e-Ham user reviews, it has established a reputation for outstanding receive performance, confirmed in tests by the well-regarded ARRL laboratory.

With sales of 6000+ kits by the end of 2007, the K2’s success and standing at the top-end of portable HF QRP rigs was well-established, but it is a transceiver for a limited market. Involving around 40 hours or more of careful soldering, wire winding, assembly, alignment and testing, it is not a task for the beginner or faint-hearted ham. The few surface-mount components are already fitted and there is minimal internal wiring, but the construction demands high-reliability soldering skills and considerable attention to detail. You may also need trouble-shooting ability, as I did due to my poor soldering of a toroid lead in the power amplifier.

There was clearly a demand for a portable transceiver that would offer the features and performance of the top rigs by the big manufacturers, easy to



Photo 1: Just out of the box

assemble, but without the hefty price tag. Elecraft’s answer was the K3, the development of which remained a well-kept secret until its release at the Visalia, California DX Convention in April 2007.

## What you get

Should you place an order, be prepared to wait for that white carton. This is definitely no instant-gratification purchase. The company partly funded the initial production run of 500 kits with a 50% deposit (which is now not needed). Demand has outstripped supply such that there is a current waiting period of over four months. As at July 2008, approximately 1160 have been shipped, the majority to the US, though quite a few are popping up in VK.

The rig can be ordered factory-assembled, or as a no-solder modular kit. The basic version gives you a 10W all-mode transceiver for HF plus 6 metres, with the stock 5-pole 2.7 kHz

filter. It will actually do 12 W on SSB. In addition, the K3 provides transmit coverage of the 60 metre (5 MHz) band. Options include an upgrade to 100 W, sub-receiver, a range of Inrad 8-pole roofing filters, general-coverage receive, on-board ATU, transverter outputs, and more. Note that you need to install a 13 kHz filter for use on 6 metres FM.

The basic version has full DSP, with configurable noise reduction, blanking and notch, plus TX and RX parametric equalization. IF width and shift adjustments are included. As with the K2, front panel space is saved by dual functioning of most button switches: tap for the main function and short hold for the secondary function. Some of the rotary controls also select their functions in this manner.

There are plenty of memories: 100 general-purpose and 80 per-band. Of the latter group, 44 are accessed quickly by the 4 fast-memory buttons on the right-hand side of the front panel. These



could prove quite useful where you want to quickly jump a large segment of a band, for example in contesting. The rig has the ability to scan, either with the receiver muted or open. You could, say, sit down and eat your lunch while the rig hunts through a selected portion of the 20 metre band, rather than be trapped at your desk. You can also scan through selected memories.

The LCD display is fairly basic, amber colour only. It shows VFO A and B frequencies, configurable dual-bar graph, pass-band filter graphics, and various annunciators and icons. There is no spectrum scope. Should you want this feature, there are third-party units available, and you will need to install the optional transverter module, which provides a buffered feed from the first IF.

The saving in weight due to the absence of a 240 V power supply, and the compact size, make for a very transportable rig. This is the one aspect that sets the K3 apart from other high-performance rigs. Elecraft wisely chose to stay with their core market rather than competing directly in the heavy desktop arena. The kit unit is quite compact at W x H x D of 272 x 254 x 102 mm. It weighs in at 3.85 kg with all the options installed. My rig weighs 2.9 kg with one option fitted.

Details of the circuitry are beyond the scope of this article, except to mention that it uses dual-conversion with IFs at 8.215 MHz and 15 kHz, after which signals go to the DSP.

Circuits are largely controlled by firmware, up-dateable free via the internet, as are complete schematics and manuals.

## Assembly

My K3 kit arrived very neatly packed and the first task was to inventory all the bits. Before unpacking it, you need to organise a well-lit uncluttered workspace, preferably where you can leave everything undisturbed ready for the next session. See Photo 1.

The kitchen table is not recommended, nor are areas accessible to inquisitive persons or animals. Most of the boards are sensitive to ESD (electrostatic discharge) and can be damaged in an instant by an ungrounded hand. My kit had all of one particular type of screw missing, so rather than wait for the US mail I got some from a local hobby shop

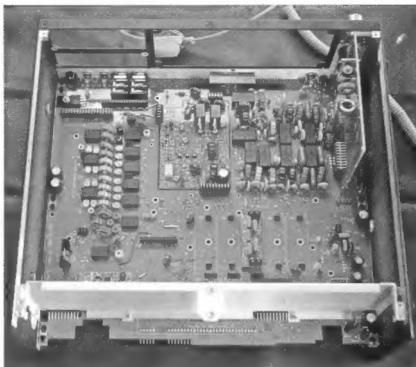


Photo 2: Assembly in progress



Photo 3: The transceiver nearing completion

for a few dollars. Most of the screws, nuts and washers are all mixed up into one bag and it is a good idea to sort them out into one of those plastic fishing tackle containers or similar.

Before starting the assembly, set out an anti-static mat with wrist strap and the few tools required. Most of it is done with a No.1 Phillips head screwdriver and your (earthed) hands. A soldering iron is

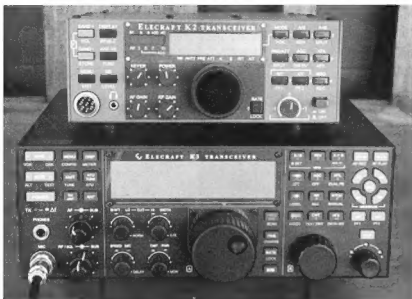


Photo 4: The completed K3 radio, with the earlier K2

only required to make up the 12 V power lead. Take care to do everything exactly as described in the manual, ticking off each step on the way. Particular attention

is needed to the length of screws and the placement of stand-offs and lock-washers. The assembly manual is clear and well illustrated. Check first on the

website as there may be revisions, and paste or copy these into the manual before starting.

The K3 uses a lightweight design which relies on the rigidity and strength of the 7 panels, which join together using special screw connectors around the edges. There is no discrete chassis as such. Integral to the structure is the main board which carries most of the RF circuitry. Into this "motherboard" are plugged the front panel board and boards for audio and digital input/output, antenna, noise blanker, mixer and low-power amplifier. The DSP, TXCO and synthesizer are fitted to the front panel board. Additional boards can be plugged in for the various options.

In Photo 2, you can see at centre rear the low-power amplifier board, which plugs into an opening in the RF board. The output transistors are underneath and bolt to the rear bottom panel which acts as the heatsink. Fortunately, the tabs of the transistors are earthed and so no insulators are required. The 5 slots for crystal roofing filters are on the front right of the RF board. The basic 2.7 kHz

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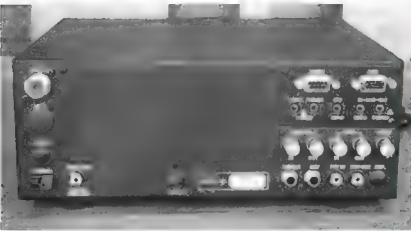


Photo 5: The K3 transceiver, rear view

5-pole filter has been installed in slot 3. Later on, the 13 kHz (FM) and 1.8 kHz 8-pole filters were added. The antenna input/output board is the one mounted vertically in the top right corner.

At the top of Photo 3 can be seen the front panel board installed in place. The two boards on the back of this are the reference oscillator (left) and the synthesizer (right). There are 3 internal plug-in coaxial cable connections. Note the anti-static wrist-strap which connects to the work mat. This is absolutely essential to prevent ESD damage.

Most of the assembly was quite plain sailing. There were a few fiddly bits where it would help to have very small and nimble fingers. A headset with a good lamp helped quite a bit, and the old 'blu-tac' on the end of the screwdriver trick came in handy. Connecting the front panel board was the trickiest part, requiring care and patience. I was not counting, but I think it took about 10 hours altogether, at a fairly leisurely pace.

Photo 4 shows the completed K3, with the K2 for comparison. The similarities of style and layout are obvious.

## Setup and controls

The K3 is quite straightforward to get on air, after first setting up the filters as detailed in the manual. There is a test and calibration procedure to be done, but the rig does most of the work and no test equipment or component adjustment is required.

Quite a bit of time was spent getting familiar with the basics, then attention turned to customizing the radio. There are two menus. The main menu has the

more frequently-used settings such as VOX sensitivity, repeater offset, display brightness/contrast, etc. and there is also an alarm you can set to wake it up.

The configuration menu is much more complex, with settings for all kinds of things to do with RX, TX and testing. This is also where you set up the filters. I found it to be quite logically structured and mostly straightforward to use. I did get confused at one point with setting up for 6 metres, but this was because there was a revision of the manual of which I was not aware. The lesson here was to check the website for current information before any new installation or if things don't seem to work as expected.

Having already used a K2, I found it easy to use the front panel on the K3 which is similarly set-out, albeit with more knobs (9) and buttons (35). I rather like the no-frills, somewhat military style of the panel, but it may not be attractive to all. The feel of the buttons is positive and the turning of knobs is smooth and precise. If you like, you can easily remove the VFO knobs with an Allen key wrench and adjust the spin resistance. As you assemble the kit you get to do this anyway.

The control labels and the LCD panel are all easy to read. I liked the uncluttered display and annunciator positioning; when operating under pressure it is easy to glance and see what is happening. Note that the controls are not backlit and you will need some light on the front when operating at night. The compact size means that some of the more expansive panel features seen on big rigs are absent from the K3. For example, band and mode are selected by

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Connections to the back panel are fairly standard. You can connect phones and mike to the back as well as the front and there is line-out audio in mono and stereo. Stereo is used for quasi-stereo and binaural effects which supposedly can help with weak-signal copy. It is claimed to be less fatiguing over long periods such as in contests but I am yet to try this feature. There is an RS232 port for computer connection and a 15 pin accessory port which can output band data, carry digital data, and control transverters. The 12 volt supply comes in via Anderson PowerPole connectors, pretty much the portable standard in the US. When power is switched on, a 12 V outlet provides up to 500 mA for any accessory device that needs to come on with the rig. There is only one antenna socket; two would be nice to have without having to fit an option module. Photo 5 shows the rear panel; the large blank space is where the fans go in the 100 watt version.

I recently fitted the optional KXV3 board which in addition to transverter lines, has in/outputs for a separate Rx antenna (such as a Beverage for the low bands) and a first IF tap for a panadaptor. Regarding the latter, there are units on the market which suit the K3 such as the LP-PAN but you need a computer hooked-up. I have decided to wait in case Elecraft produce a stand-alone unit. When portable it would be good to have the option of taking a light-weight bandscope without having to carry a laptop. But it could be a long wait.

Overall, I am happy with the controls. A good feature is that you can set up a fast tuning step which is controlled by the RIT/XIT knob. This functions similarly to the "select" knob on my FT-817, and I find this excellent for contests. Unfortunately the selectable steps are only 2.5, 1.0 and 0.1 kHz, and for me it is annoying not to have 0.25 and 0.5 kHz steps. Also you have to go to the configuration menu to adjust this, though I plan to see if I can put it into a front panel button as a special function. Direct frequency entry is easy. The RIT/XIT is well set up, with LED indicators for  $\pm 0$ -offset and also next to the transmit LED, there is a delta-f LED, which comes on if there is a TX/RX offset, due to RIT, XIT, or split operation.

## The operating experience

After reading various reviews praising the K3's receiver, expectations were high and the rig did not disappoint. The sensitivity, combined with the noise fighting capabilities of the DSP unit, made for good readability of some very weak SSB. Nevertheless, my home location is remote and solar-powered and therefore very QRM quiet.

On CW, some extremely weak signals could be plucked out. Unfortunately my Morse skills are almost non-existent due to lack of practice, but I imagine that the K3 might be a delight for a good operator. The auto spot tuning function is very helpful. I tried the Morse to text decode feature and at first this was disappointing, but a careful reading of the manual helped me to set it up to get better than 90% sensible copy of the WIA 80 metres automated Morse transmission. It seemed not to like the slow Morse, often breaking 4 and 5 dot/dash letters into smaller components, giving lots of Is, Ss and Ks. The rig is also RTTY and FSK decode capable, but this was not tested.

On transmit, everything functioned well, after a problem was sorted out. This took the form of a missing circuit board link which snuck through quality control on a run of units, and which prevented the front-panel mike from operating correctly. The result was dreadful distortion on my first serious transmission. Naturally I was appalled, having no idea what was wrong, let alone how to fix it. However the ever-helpful Elecraft forum and support people were there and it was business as usual after removing the offending board and soldering in the link with hook-up wire.

Audio reports have been good, though if you crank up the compression to the higher levels, it will not be hi-fi. I found moderate compression levels very helpful in getting through QRP on 80 metres to north-east NSW on a recent remote portable stop in East Gippsland. I was using the tiny 20 W Elecraft auto-tuner into a G5RV slung up about 7 metres into the mountain ash forest.

I gave the rig a workout on the NZART 80 metres Memorial Contest and was able to copy through static stations that others seemed unable to hear. When things got a bit cramped at one stage,

I selected the 1.8 kHz filter, which did an excellent job of cutting out strong close-in stations, while maintaining good readability.

It is expected that the voice recorder option will be available soon. I will probably get this, as being able to record and play voice would be very useful for long contest operation. It also allows voice announcement of controls.

Rather than reproduce the factory specs here, you can check them on the Elecraft website. While you are there, download the QST (ARRL magazine) review and the laboratory test comparisons, which are a real eye-opener when you see the receiver figures compared to some more expensive rigs.

## Summing up

The K3 is arguably at the very top when it comes to portable HF rigs. It is rugged, light weight, and easily customised. Everything is geared towards maximum performance on HF and 6 metre ham bands. If you want general coverage receive there is an optional module which adds 8 extra band pass filters. With noise reduction engaged on the static-free bands, signals seem to just pop out of silence. The standard of components, circuit boards and hardware is excellent. So is the cabinet finish and labelling.

It is unusual if not unique to see a transceiver designed entirely by active hams, with downloadable firmware revisions which take on board the comments of users. Some have complained about the slow delivery, suggesting that the release was premature. However, no one is twisting your arm to buy one and I suspect that without the process of accumulating forward orders to finance development and manufacture, this radio would never have been built.

The price of the basic kit is very reasonable for a high-performance transceiver. However, if you install all the options including 100 watt PA, full independent second receiver, and on-board antenna tuner, it will set you back a fair bit more. The good thing is that it is not just a one-size fits all. You can fit what suits your needs and budget. GST, currency conversion and customs clearance charges add quite a bit, but at least there is no middleman (or men). I should mention that the price does not include a mike. It is up to the buyer to

choose between hand mike, desk mike and headset, or adapt the pin-outs of an existing mike to suit. The Heil headset and a footswitch or VOX make a very good combination for contesting.

A very big plus for the K3, or any Elecraft product for that matter, is the outstanding customer service and support network. When stumped by a firmware change, I sent an email to the forum and got the information I needed from a US operator in twenty minutes. Likewise, the company support people will promptly and politely attend to your inquiries.

It is not real kit building like the K2, but the assembly experience I would say is definitely worthwhile. It engenders a deal of pride and you save quite a few dollars. I would recommend the kit version unless you are mechanically challenged. Compared to a K2 kit, it is a breeze. Also, you get a much better appreciation of what is inside the box; and yes, it is only available in black.

To operate, I find it to be a delight whether in the field or on the desk. It looks and behaves like a precision radio. My K2 is now reserved for extra-light operations, but that older, smaller brother (sister?) of the K3 is still the ultimate in kit challenge and satisfaction. Or if you like portable CW QRP, take a look at the K1, or even the tiny KX1 with mini-paddle. Judging by the forum postings,

there have been a few production glitches, but it seems everyone ends up satisfied. I can forgive the two problems I encountered, since they were easily fixed. The level of access to support, right up to the designers themselves, is outstanding in the world of ham transceiver manufacturing.

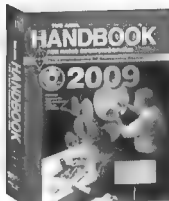
The K3 is a transceiver that would suit HF operators who want portability and high receiver performance at a moderate price, plus a dose of the owner-builder experience. Other considerations are the ability to customize the rig and to update firmware. With the Aussie dollar almost on parity with the US (at the time of writing), it represents great all-round value. *(Readers should consider the current exchange rates. Ed.)*

Please note that this is an unsolicited article and the author paid full price for the kit.

For further information see:

- [www.elecraft.com](http://www.elecraft.com)
- the K3 wiki at [www.zerobeat.net/mediawiki/index.php](http://www.zerobeat.net/mediawiki/index.php)
- [www.cham.net/reviews/](http://www.cham.net/reviews/)
- Heathkit history at [www.heathkit-museum.com](http://www.heathkit-museum.com)
- CW backpacking at the wilderness radio site: [www.fix.net/~jparker/wild.html](http://www.fix.net/~jparker/wild.html)
- the LP-PAN panadaptor at [www.telepostinc.com](http://www.telepostinc.com)

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## Closing remarks

Enough reflection on the past few days.... This Editorial is already far too long!

Perhaps it was best that I decided against attending Wyong – it was much easier being at home and considering the actions that I might take if the wind direction had changed to bring the fire towards the town. From all accounts, the event went well. I look forward to some reports in due course.

At the WIA Office, preparations are full steam ahead with all the paperwork for the AGM to be held in May.

Again, I ask that you write up that latest project as an article for AR. Our stock of articles is dwindling, so the turn around time between submission and publication should be shorter than average.

73

Peter VK3KAI

## Editorial

*continued from page 5*

Even in the toughening economic climate, our countrymen are showing their generosity – several organisations are calling for donations, and funds are rushing in to those appeals. Such support is not surprising, given the devastation – Victoria Police are predicting that over 200 lives will have been lost, and the impacts of properties has been massive.

As further information comes to hand, I am sure that there will be some requirement for action from some or all of us in some form. Perhaps providing assistance: to individuals, through WICEN or other agencies, or even simply contributing to one of the relief appeals.

I am sure that we are all wishing the best to all who have been impacted by these events.

# A useful up-converter for the HP-8922S

Peter Whellum VK5ZPG and Mike O'Ryan VK4YNQ

An up-converter has been designed for surplus GSM HP-8922S test sets with inbuilt spectrum analysers that removes the 10 MHz lower limit and allows the spectrum analyser to be used for general purpose testing over the HF band between 0.3 MHz to 30 MHz. The up-converter may be used with other microwave spectrum analysers as well to extend their usefulness down to the HF band while maintaining signal amplitude integrity.

## 1. Background

I was pleasantly surprised when I recently purchased a HP-8922S GSM Test Set from eBay for well under US\$700. This deal also included a unit (the HP-83220E) that extended the frequency range to between around 1.7 to 1.9 GHz but I found no real use for it and stripped it for parts, many of which, and particularly one of the step attenuators, proved very useful in the construction of an up-converter.

The HP-8922S provides a number of useful functions for fellow amateur radio enthusiasts, such as an inbuilt spectrum analyser with a frequency range of 10 MHz to 1 GHz, a synthesised RF signal generator between 10 MHz to 1 GHz with 1 Hz resolution that has an output level between -14 dBm to -127 dBm, a 25 kHz audio signal generator with 0.1% distortion, an AC voltmeter with 100 kHz bandwidth, a DC voltmeter (max of 42 V DC), a 1 kHz audio distortion analyser with a measurement minima of 0.1%, several audio filters and detectors (peak, average, rms) and a 50 kHz audio oscilloscope. There are also a lot of other mobile phone test functions that will simply not be used. Overall, a useful piece of test equipment for the shack above 10 MHz, but the question was how to make this useful for the lower HF bands, 40 metres and lower?

Discussions with Mike O'Ryan VK4YNQ saw the kind offer to provide a design of a suitable up-converter that extends the useful range down to 0.3 MHz. The following is Mike's discussion on this design, and calibration of the unit.

## 2. Technical description

### 2.1 The design approach

After several discussions with Peter VK5ZPG on his GSM Test Set HP-

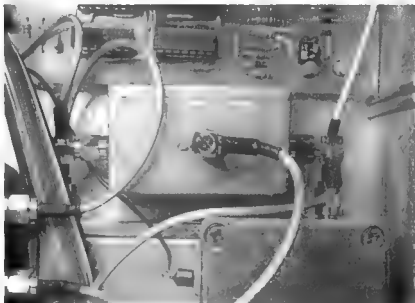


Photo 1. Mixer in the centre – SRA-3 double balanced mixer mounted internally on a small PCB.

8922S acquisition and his need to extend the useful range down to the 455 kHz region for radio IF alignment and for SSB crystal filter tuning, several design ideas on an 'up-converter' began to form. The chosen design approach for the up-converter was to use readily available MMICs for wideband amplification and to use a commercially available double balanced mixer for ease in construction. Conversion accuracy was also an important consideration to achieve since the up-converter is being used as the 'front end' for the HP-8922S spectrum analyser, and indeed, could equally be used by other microwave spectrum analysers such as the HP-8969 that also have a lower limit of 10 MHz. Amplitude levels needed to be preserved in the frequency translation to a higher frequency that is usable by the spectrum analyser (above 10 MHz).

A design goal was therefore to set

the RF input upper frequency limit to 20 MHz, and to have a lower input frequency of 0.4 MHz, as this was considered sufficient for most radio amateur activities in performing 455 kHz IF alignments and leakage measurements. Amplitude accuracy of better than  $\pm 1$  dB was highly desirable too, so that absolute power levels in dBm could be read off the spectrum analyser display and any converter loss or gain were to be in 10 dB step multiples to keep power level readings simple. For HF band use and experimentation, the local oscillator (LO) used needed to be higher in frequency by at least twice the user RF bandwidth so that minimal filtering would be necessary, while maintaining a good, spurious free, dynamic range. One last desirable feature was to add a switchable low noise amplifier (LNA) to improve the Noise Figure (NF) of the spectrum analyser so that low level

RF signals dynamic range could be increased to comparable to the NF of most HF communications receivers (typically between 8 to 16 dB).

The technical design specification list soon formed and the following was settled upon for the basic up-converter design:

Converter Input frequency range	0.4 to 20 MHz (+/- 1 dB)
Usable range	0.1 to 30 MHz (-3 dB)
Converter LO frequency	60 MHz.
Conversion loss	0 dB nominal.
Converter maximum input level (0 dB attenuation)	-20 dBm
RF Input Attenuator	10 dB steps, 50 dB range or more.
Switchable LNA gain	nominally 20 dB
Up-converter noise figure with no LNA	15 dB
Up-converter noise figure with LNA	6 dB
Input and output impedances	50 ohms

A block diagram of the up-converter is shown in Figure 1. The nominal power levels through the blocks are also shown. The goal is to achieve a net 'zero dB conversion loss' so that the output signal levels are directly representative of the input RF power levels and only translated or 'up converted' in frequency (60 MHz in this case) as shown in Figure 2 - that is within the spectrum analyser's operating range.

## 2.2 Input Low Pass Filter (LPF)

The sensitivity to out-of-band RF emissions at the converter's input (and

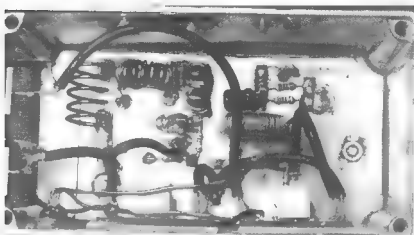


Photo 2: Input LPF and Pi attenuator pad, at left. LNA is at right. Omron relays and their PCBs glued to lower side of diecast box, at bottom.

the creation of spurious responses) is eliminated by band-limiting the input RF signals with an input filter. A sixth order, inductive input Butterworth LPF is used to provide a maximally flat pass-band response to 24 MHz (-0.1 dB) and a design cut off frequency of 30 MHz (-3 dB). A seventh order filter capacitive shunt input could equally have been used but an inductive input was considered more tolerable by test circuits for those out of band frequencies above 30 MHz.

Three inductive filter elements are used, L1 being an air coil and two (L2 and L3) wound on T50-10 small powdered-iron cores that have an operating frequency range of 30 to 100 MHz. This allows the inductors to operate well past the filter stop band. The capacitors are standard E12 value small ceramic types. The inductors do have

lower operating Qs than the ceramic caps which results in an upper pass band insertion loss of 0.2 dB at 20 MHz. The input filter is terminated in a resistive 2 dB pi pad that helps the filter to maintain the design characteristics when there is no input step attenuation, as well as to improve the 50 ohm input matching.

## 2.3 Input Attenuator

To allow a greater dynamic range, an input 10 dB step 50 dB to 70 dB attenuator may be used to increase the usable RF input level to nominally +20 dBm or more. A front panel manual rotary attenuator with 50 ohm impedance and specified for 500 MHz to 1 GHz frequency is used for this purpose. These are available at quite reasonable prices both locally and overseas. Where front panel space is crowded a remotely controlled attenuator may also be used (a

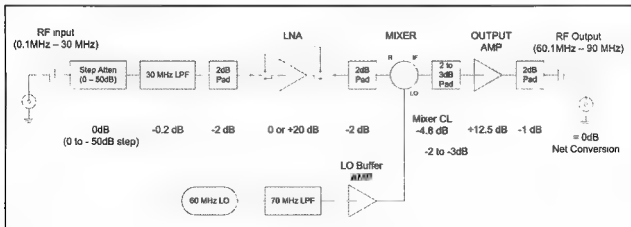


Figure 1: Block diagram of the up-converter.



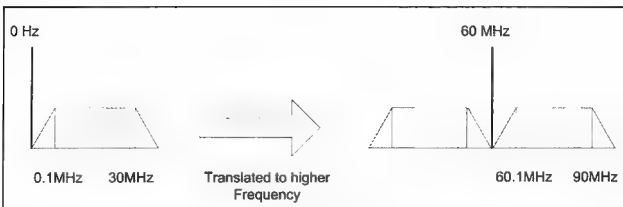


Figure 2: Frequency translation.

detailed design for a remotely controlled attenuator using common HP-33321C parts is the subject of a separate article). The RF input level to the mixer should be kept to a maximum of  $-20$  dBm to keep the harmonic spurious levels to a low level.

## 2.4 Low Noise Amplifier (LNA)

Typical spectrum analyser noise figures (NF) vary between 30 to 35 dB with 0 dB RF input attenuation. To improve the NF of the spectrum analyser, a low noise amplifier (LNA) is switched into the signal path. Using an ERA-5 wideband amplifier MMIC (IC7) with an inherent NF of 4.5 dB and a gain of  $20 \pm 1$  dB, then the overall NF for a spectrum analyser (with a NF of 30 dB) and the up-converter is improved to 12.5 to 13 dB. Put another way, the signal

sensitivity of the spectrum analyser is improved by 17 dB.

The individual component contributions to gains and the overall noise figure for when the LNA is switched in circuit, is shown in Table 1.

The ERA-5 output bias current is set by DC bias resistors R7 and R14 from a regulated 12 V DC supply. The combination of bias resistor(s) and RFC is in parallel with the 50 ohm output and should be greater than 500 to 600 ohms to minimise the shunting effect across the 50 ohm output at the operating frequencies. To cover 2.5 decades (0.1 MHz to 50 MHz) with toroidal RFCs, a series combination of two RFCs is needed, a 26  $\mu$ H RFC (L4) that covers 3 to 30 MHz, and a 200  $\mu$ H RFC (L7) that covers the 0.1 to 3 MHz frequency range. A parallel 470 ohm resistor (R15) across

the 200  $\mu$ H RFC suppresses the series resonance that occurs within the pass band below 30 MHz due to capacitive resonance in the RFC winding.

The LNA is switched in and out of circuit with Omron-G6Z 50 ohm RF relays that have an isolation of 60 dB or better at 30 MHz. The prototype was constructed around a relay kit purchased from MiniKits in SA and modified for the up-converter. The MiniKits' LNA, with small component changes, could also be used for this project's LNA.

## 2.5 The Mixer

For the up-converter with a required low frequency response of 0.4 MHz, and a usable goal to 0.1 MHz, then using a double balanced ring mixer (DBRM) with corresponding low frequency response is needed. A commercial 'Level 7 mixer' (7 dBm LO level) was

Component Data	Pad1+Atten	Pad2	LNA ERA-5	Mixer	Pad3	G ERA-6	Pad4	SA
Gain (dB)	-2.2	-2	20	-4.8	-2.5	12.5	-1	0
NF (dB)	2.2	2	4.5	5.8	2.5	4.5	1	30
<b>Gain Linear</b>	<b><math>\approx 10^{(\text{dB}/10)}</math></b>							
Gain (linear)	0.60	0.63	100.00	0.33	0.56	17.78	0.79	1.00
NF (linear)	1.66	1.58	2.82	3.80	1.78	2.82	1.26	1000.00
<b>Running Total of cascaded linear Gains</b>								
Gain (linear)	0.60	0.38	38.02	12.59	7.08	125.89	100	100
<b>Running total of Friss eqn</b>								
F	1.66	2.63	7.41	7.49	7.55	7.81	7.81	17.80
<b>Cascaded Gain and NF(converted back to dB)</b>								
Gain (dB)	-2.2	-4.2	15.8	11	8.5	21	20	20
NF (dB)	2.2	4.2	8.7	8.74	8.78	8.92	8.93	12.50

Table 1: Up-converter cascaded component gains and noise figures.

preferred rather than constructing from scratch, so several MiniCircuit mixers were considered for the project and are summarised below:

<b>SBL-3</b>	Rated at 0.025 MHz – 200 MHz	conversion loss 4.8 dB AUD \$15
<b>SRA-3+</b>	Rated at 0.025 MHz – 200 MHz	conversion loss 4.8 dB AUD \$30
<b>SRA-6+</b>	Rated at 100.03 MHz – 100 MHz	conversion loss 4.8 dB AUD \$40
<b>TAK-5+</b>	Rated at 0.05 MHz – 150 MHz	conversion loss 4.7 dB AUD \$40
<b>ZFM-3</b>	excellent low frequency Rated at 0.04 MHz – 400 MHz	conversion loss 4.8dB stand alone package with SMA connectors, cost approximately AUD \$80

During construction and testing, a wide range of mixers was tried, including the ubiquitous SBL-1 and SBL-2, however their low frequency response was found lacking. The ZFM-3 mixer gave excellent results of +/- 0.1 dB amplitude flatness from 0.2 to 24 MHz but these may be difficult and expensive to source.

The SBL-3 (or better still, its newer production stablemate the SRA-3+) was selected for the final build, achieving an up-converter amplitude flatness of +/- 0.4 dB from 0.2 to 24 MHz. Any of the other mixers listed above however can equally be used and is just a matter of availability and price for the constructor.

The mixer IF output is terminated in a resistive pad that also serves as a variable adjustment for system gain. R22 is a single-turn trim pot that provides the small 1 dB system variation by changing the attenuation between 2 to 3 dB.

## 2.6 The LO Oscillator

A small hermetically sealed 60 MHz local oscillator (LO) made by Vectron was obtained from RFplus, although other oscillators could equally be used here. The Vectron oscillator is a very stable, voltage adjustable (VCXO), crystal oscillator that runs off a 3.3 V DC supply. The VCXO oscillator has a buffered output that is quite capable of driving a 50 ohm load at +7 to +8 dBm output level, but has a 2nd harmonic at -35 dBc and a strong 3rd harmonic that is only -18 dBc from the fundamental. The VCXO output is attenuated and filtered

with a 5th order Chebyshev low pass filter to reduce the 2nd and 3rd harmonic by a further 20 dB and 40 dB (-38 dBc and -48 dBc) respectively. The two inductors L9 and L10 are air coils. The filtered LO signal is amplified by 11 dB with a MAV-11+ MMIC (IC2), and then passed through a two element post filter to the mixer LO input that attenuates any higher order harmonic responses. R24 and R27 are adjusted for the correct output level to the LO of +7 dBm.

The MAV-11+ may be substituted with an ERA-5 and if so, then the bias resistors R13 and R23 need to be changed from 220 ohms to 200 ohms as well as re-adjusting R27 for LO of +7 dBm.

## 2.7 The Output Amplifier

The output amplifier uses another MMIC, an ERA-6 (IC3) that has a power gain of 12.5 +/- 0.5 dB, a high output power but with a low spurious output due to its high 3rd order intercept point (IP3). The output amplifier is operating at LO +/- RF image frequencies. In normal operation, the spectrum analyser is tuned to the upper image between 60.4 – 90 MHz for viewing the RF input frequency between 0.4 – 30 MHz.

The power gain needed from the output amplifier however, is only 8 to 9 dB. The stage gain is reduced by using the variable pad at the mixer IF output and a fixed 1 dB output pad on the up-converter output connector. Small differences in amplifier gain and component tolerances can be adjusted out with R22 over a 1 dB range. The 1 dB output pad also improves the output amplifier return losses for a good 50 ohm match.

## 2.8 Voltage Regulators

An unregulated DC supply between +14 to +20 V is regulated to +12 V using a LM317 three terminal voltage regulator (IC5). Current draw on the +12 V line is about 310 mA, being the sum of the following: 85mA for the output amp (ERA-6), 85mA for the LNA (ERA-6), 60mA for the LO amp (MAV-11+), 40 mA for the Vectron VCXO oscillator low voltage regulator and 40 mA for two LNA relays.

The 12 V regulator needs to be mounted on a heat sink for cooling. The +3.3 V for the VCXO also uses a LM317 three terminal voltage regulator (IC4) but does not require a heatsink.

## 2.9 RF Input Levels

Linear operation is mainly determined by the mixer RF input level relative to its LO drive level. Using the SBL-3 mixer with a +7 dBm LO drive level, the nominal maximum input level for linear operation is approximately 20 to 25 dB below this level so the input should be no greater than -13dBm.

With the 20 dB gain LNA switched in circuit, the maximum input RF level is reduced to -33 dBm for linear operation. The LNA is used for looking at low level signals, particularly those near the noise floor of the measurement environment, and is normally switched out of circuit. With the input attenuator switched in for higher level signals, the maximum input level is increased proportionally by the 10 dB step(s) and limited by the power ratings of the attenuator.

## 2.10 Schematic

(see Figure 3, next page)

## 2.11 Coil winding details

- L1: 137 nH: air core, 5 turns, 10 mm diameter, 13 mm coil length, 12 AWG wire.
- L2: 512 nH: T50-10 powdered iron toroid, 13 turns, 18AWG wire.
- L3: 137 nH, as for L1.
- L4: 26.5 uH: T68-2 powdered iron toroid, 68 turns, 28AWG wire.
- L5: 1.3 uH: T50-10 powdered iron toroid, 21 turns, 28AWG wire.
- L6: 1.3 nH, as for L5.
- L7: 200 uH: Jaycar LF1104.
- L8: 0.13 uH: as for L1
- L9: 148 nH: air core, 4 turns, 12 mm diameter, 10 mm coil length, 18 AWG wire.
- L10: 148 nH: as for L9.

## 3. Construction

### 3.1 Overview

To minimise RF leakage, and to allow for easy build modification, the prototype up-converter sections were housed in small individual diecast boxes:

- a) VCXO and buffer AMP;
- b) LPF, relay switching and LNA;
- c) mixer (unless you decide to use the ZFM-3 which is already packaged with SMA connectors); and finally
- d) the output amp. Refer Photo 1.

Each of these stages was constructed using the ubiquitous 'Paddy-board' or 'Manhattan' method, but 'ugly style'



would work just as well; in both cases, good RF practice should be followed – ensure a clean layout and minimum component lead length where possible – Refer Photo 2.

SMA sockets and connectors, and small diameter Teflon coax, were used for all interconnecting RF lines, with power to each stage provided via feed-through capacitors screwed through the side walls of each diecast box.

I used a HP33321SC 0-70 dB step attenuator (10 dB steps) in my unit, ratted from the dismantled HP-8322OE, which required a pulsed switching circuit, designed by Mike O’Ryan VK4YNQ and the subject of a later construction article.

All small diecast boxes, along with the step attenuator and its switching circuit PCB, and inbuilt 240 V AC power supply, are housed as a self-contained unit in a larger diecast box measuring approximately 270 x 170 x 65 mm (WDH). Refer Photo 3.

I was fortunate in having a digital LC meter during the construction phase which proved most useful in accurately winding inductors and in the selection of correct capacitors for the various filters. Several of my capacitors were poorly marked and it is important to have the correct component values for the construction of the filter networks.

## 4 Testing

If you construct the converter as I did by using individual small diecast boxes, I would suggest you build one stage at a time and thoroughly test each as you go. Before applying 14 to 20 V DC, thoroughly check all of your wiring and pay strict attention to the polarity of any electrolytic capacitors and LEDs – and double check that the relevant MMIC devices are correctly orientated on your board.

If you are like me and tend to make your ‘Paddy-board’ builds on the small side, double check for solder blobs or component lead cut-offs that may cause a short circuit.

Ensure that you have +12 V DC and +3.3 V DC power at the relevant points of the circuit.

It is also suggested that you clearly mark the maximum input signal level on the front panel adjacent to the input coax socket. (for example,

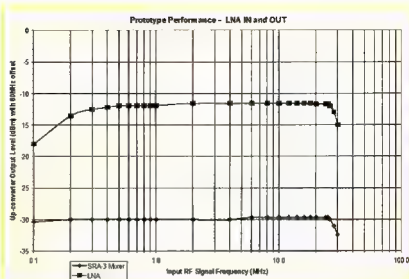


Figure 4: Up-converter frequency response – LNA in and out.

‘Warning - Maximum +10 dBm (zero attenuation)’).

I also found it most interesting and useful to manually plot the responses of the up-converter components, as well as the complete ‘through’ response of the up-converter into spreadsheets. Figure 4 shows the measured response with a -30 dBm input RF signal at discrete frequencies between 0.1 to 30 MHz and measured at the up-converter output at 60.1 to 90 MHz with both the LNA switched out and switched in. The amplitude flatness with just the SRA-3

mixer was  $\pm 0.2$  dB between 0.2 to 26 MHz, and with the LNA switched in, the overall gain flatness was then  $\pm 0.5$  dB between 0.3 to 26 MHz. In the prototype, the LNA gain was measured at +18 dB rather than the expected +20 dB but is still very useful in bringing the low level signals out of the noise for spectrum analyser display.

It was during my final testing for overall performance that Jon Wright of RFplus suggested I swap the IF and RF ports of the double-balanced ring mixer (SRA-3) to improve the low

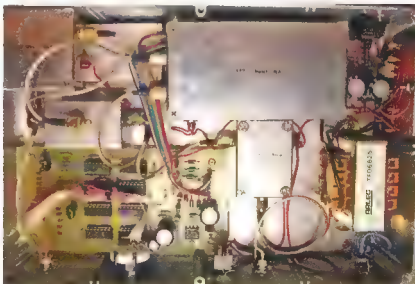


Photo 3: Up-converter. (Attenuator switching bottom left, mixer left of centre, LO top left [HP33321C attenuator beneath], LPF and input LNA top right of centre, power supply top right, output amp beneath LPF, right of centre)

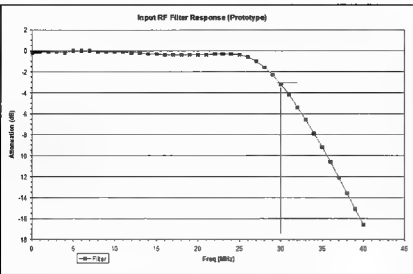


Figure 5: RF Input LPF response (prototype).

frequency response – and I can report this is definitely worth trying – and easily achieved if the mixer is built into its own small diecast box with SMA connectors to allow ease of swapping these ports.

#### 4.1 Calibration

The up-converter can be used directly with no level calibration, by setting R24 and R27 to mid position. The absolute level uncertainty however would potentially be +/- 2 dB without calibration, depending on components used. Calibration is recommended and requires access to a signal generator with known output power levels, and power meter (or other device such as a HP-8922S itself, a VKSEME power meter, or a vector voltmeter with 50 ohm termination).

Disconnect the LO Buffer amplifier output from the Mixer LO input. Terminate the LO buffer amplifier at C18 with a 50 ohm load input impedance measurement device such as the HP-8922S itself (with its internal attenuation setting to 10 dB or more). Adjust R16 (a 10 k ohm, multi-turn trim-pot) of the VCXO to obtain 60.000 MHz. Next, adjust the value of R27 to obtain a mixer LO drive of 7 dBm. The LO drive harmonics should be smaller than -30 dBc. Re-connect the LO buffer amplifier output to the mixer LO input.

The input LPF filter should be checked for flatness and that its pass band attenuation is not greater than 0.3 dB at 24 MHz. If the attenuation is greater than 0.3 dB then check the component values and materials used and re-test.

The prototype LPF pass band response is shown in Figure 5 and was plotted with a VKSEME Power Head which outputs a DC level that is proportional to the input RF level.

Next, the completed up-converter is adjusted for a 'Zero dB' conversion loss and with the LNA switched out (not used). Connecting all the blocks together now, apply a known, low level -30 dBm RF signal at several spot frequencies (for example, 0.5, 4, 8, 12, 16, 20 MHz) to the input of the up-converter and adjust R22 to obtain the best 'average' unity power gain setting at the up-converter output (but translated in 60 MHz frequency offset). The amplitude level variation should typically be less than +/- 0.5 dB. Do not forget to calibrate your test cables and to subtract their losses when doing these calibrations.

If you are planning to use this converter with a HP-8922S or similar unit, then use the spectrum analyser to measure and plot the output responses.

Finally check that there is a nominal 18 to 20 dB increase in displayed level on the spectrum analyser when the LNA is switched into circuit.

#### 5. Summary

If you are fortunate in obtaining a relatively cheap GSM type Test Set from eBay or other sources, do not be disheartened if you find the spectrum analyser only covers 10 to 1,000 MHz as does the HP-8922S. This easily constructed up-converter will be a most worthy addition, enabling the GSM

spectrum analyser to be used on the lower HF frequencies.

The 'as-built' VK4YNQ up-converter design easily met all the performance requirements and has become a useful and accurate test equipment accessory for the HP-8922S, or indeed any microwave spectrum analyser.

The overall cost of the project will depend on the state of your junk box and what additional components you may need to purchase – see suggested sources at the end of this article.

My sincere thanks go to Mike VK4YNQ for his effort not only in the original design, but also for help and technical discussions during the building phase of this project and, of course, for his assistance in the writing of this construction article.

#### Sources and References

- RFPlus. Mixers, Vectron oscillator and MMICs. Email: jonwright@gmail.com  
 Web site: <http://rfplus.jonwright.org/>  
 MiniKits: powdered iron cores, RF relays (kit), MMICs, SMA sockets, and so on.  
 Web site: <http://www.minikits.com.au>  
 Jaycar: 1% metal film resistors, ceramic capacitors, regulator ICs, diecast aluminium boxes.  
 Web site: <http://www.jaycar.com.au>  
 Altronics: for other components. Web site: <http://www.altronics.com.au>  
 Rockby Electronics: for other components. Web site: <http://www.rockby.com.au>  
 RS Components: Diecast boxes (52 x 38 x 27 mm (LWH)) stock no. 343-9502 – ideal for small circuits such as the Mixer and LO). Web site: <http://www.rsaustralia.com>

#### References

- [www.microwaves101.com/encyclopedia/noisefigure.cfm](http://www.microwaves101.com/encyclopedia/noisefigure.cfm) – a quick overview of cascaded NFs.  
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#### Authors

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Peter Whellum VK5ZPG provided all the construction and modification effort in building the up-converter, and may be contacted for helpful suggestions concerning these aspects email [pwhellum@bigpond.com](mailto:pwhellum@bigpond.com) or telephone (08) 8648 6504

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# New arrangements for the management of amateur callsigns

Michael Owen VK3KI

From 2nd March 2009 the WIA will assume responsibility for making recommendations to the ACMA for a callsign leading to the issue of all future amateur station licences or a variation to existing licences (upgrades etc). In effect this means that from 2nd March 2009, an application to the ACMA for an amateur licence or a variation of an existing licence will need to be accompanied by a recommendation letter from the WIA.

To better manage amateur call signs, the WIA will publish on its website using selective searches, a listing of all available callsigns, including repeaters and beacons. This information will be updated on a daily basis.

Under the Business Rules agreed between the WIA and the ACMA, there will be five classes or levels of recommendation that the WIA will issue.

These are:

- Level 1 – a three or four letter call sign in any state or territory where the WIA will select the next available call sign ("I don't want to choose a call sign"); the application fee is \$5 including GST;
- Level 2 – a three, four and two letter call sign in any state or territory except New South Wales, Queensland and Victoria, where the individual can select two preferences for a particular call sign shown as an available call sign from the website daily list; the application fee is \$20.60 including GST;
- Level 3 – a two letter call sign in the state of New South Wales, Queensland or Victoria. Due to the future demand for two letter call signs in these states, additional administrative arrangements are necessary to ensure to the extent possible a fair and equitable arrangement has been put in place. Applications for two letter callsigns in these states will only be accepted by mail; the application fee is \$48.85 including GST;
- Level 4 – a special event callsign in any state or territory. Applications for a Special Call Sign should only be made where the construction of the call sign is outside the conditions detailed in Section 8 of the Radiocommunications Licence

Conditions (Amateur Service) Determination No.1 of 1997 or the section on call signs in the ACMA information paper titled Amateur Licence Information Paper. ACMA requires that applications for special call signs must be made three months prior to its use. In seeking a recommendation from the WIA, full details of the event and the reasons for the request should accompany the application; contact the WIA national office for application fee details; and

- Level 5 – an amateur repeater or beacon call sign in any state or territory. A WIA callsign recommendation will need to accompany a licence application and the frequency coordination letter from the WIA; the application fee is \$20.60 including GST.

All recommendations are valid from the date of issue for a period of 28 days. However, extensions may be granted upon request to the national WIA office.

The WIA is very conscious that an amateur may lose a valued call sign for all sorts of reasons, sometimes an error completely beyond his or her control. The WIA also recognizes that if this happens, it is highly likely that someone will notice the call sign appear on the WIA website, and let the previous holder know. Accordingly, before any recommendation is finalised, the WIA will allow five (5) working days from the time a call sign first appears for an error or omission to be corrected. If the previous holder does not act in that time, then the call sign will be recommended, if someone asks for it.

Further information and application forms for each class or level of recommendation can be obtained from the WIA website.

The WIA is continuing to offer

successful amateur examination candidates the opportunity to lodge their application for an apparatus licence through the Exam Service, if the WIA Assessor is agreeable. They will need to complete a particular part of the Assessment Sheet, add the appropriate amount (for a Level 1 or a Level 2 application) to the amount given to the Assessor, complete the ACMA Application for an apparatus form and also a WIA Callsign Application form. This is a special form for Levels 1 and 2 applications, and is designed to be linked to the details already provided by the candidate for the assessment. The WIA will forward the Application for an apparatus licence, payment, and the Callsign Recommendation to ACMA on behalf of the candidate.

WIA Assessors will have the WIA Callsign Application forms which will also be downloadable from the WIA website.

As with the management of examinations and the issue of certificates of proficiency, the WIA is obliged to charge fees on a cost recovery basis. That charge must be approved by ACMA as being reasonably related to the costs incurred or to be incurred by the WIA in relation to the matters to which the charge relates. In short, the WIA must charge a fee for a service that recovers what it costs the WIA to provide the service. It cannot charge less than such a fee.

Of course, and unlike the examination management function, the WIA has no experience of providing this service, and so after the first year the contract between the WIA and ACMA governing the management of examinations, the issue of certificates of proficiency and this call sign service, requires a complete review of the costs after the first year, and thereafter the provision of annual audited financial information to ACMA.

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# Matching network software

Ron Sanders VK2WB

There are lots of software programs available on the Internet which make the design of RF matching networks easier, and also help to understand the process. I have selected some which I have found useful and instructive. Some even help reveal the mysteries of the dreaded Smith Chart.

Ideally you should know the source and load impedances for the network. A common application involves matching a 50 ohm source to a complex load such as an antenna system. SuperSmith (Reference 3) provides the tools to get a perfect match once you know the network component values and the source and load impedances. In cases where significant RF power is present, the components must be sized correctly to safely handle the voltages and/or currents. The voltages/currents for each component can be calculated by the LTSpice program (Reference 4). Iron-powder toroid cores are often used as inductors in these networks, but care must be taken to keep the voltage across the winding within safe limits. The safe working voltage for an iron-powder toroid inductor is calculated in Minirk (Reference 5).

What if you do not know the load impedance? See the suggestions under RevLoad (Reference 3) below.

## The programs

The example shown in the different programs is for a Pi-network which will match a 50 ohm source to a complex load impedance  $(r \pm jx)$  of  $(100 - j100)$  ohms at 10 MHz. The  $j$  operator shows that the value is a reactance. Positive  $j$  values are inductive and negative values are capacitive. The example therefore has a load consisting of a 100 ohm resistance ( $r$ ) in series with a capacitive reactance ( $-jx$ ) of 100 ohms – equivalent to approx 159 pF at 10 MHz.

### SuperSmith program (Reference 3)

The "Design" page allows you to insert components in any of the 5 network stages as well as the complex load impedance. Figure 1 shows the design page with the network values inserted. The  $Q$  value of each component can be set to reasonable values. I usually

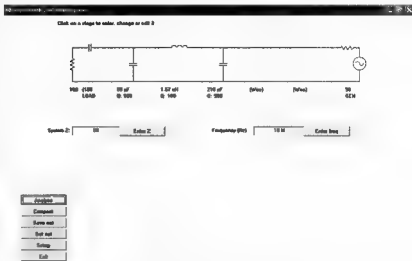


Figure 1 SuperSmith Design

use  $Q=100$  for inductors and  $Q=500$  for capacitors. Enter the values shown in Figure 1 and then hit the Analyze button.

Figure 2 shows the "Analyze" page which is dominated by the Smith chart. This is a simplified version of a Smith Chart, where only the most important lines are shown. As usual the chart is normalized to 50 ohms which means that the complex impedances are plotted as  $(r \pm jx)/50$ . The normalized resistance ( $r$ ) is plotted along the horizontal axis starting on the left end with 0 and finishing on the right end at infinity. The actual calibration points  $>5$  are not shown on this simplified version as the scale becomes too crowded. The curved lines show the major normalized reactance ( $jx$ ) values. The top half shows positive values which indicate inductive reactance ( $XL$ ), and the bottom half shows negative values which indicate capacitive reactance ( $XC$ ).

The point marked Load is the normalized value of  $(100-j100)$  which is at the intersection of  $(2-j2)$ , and

is the starting point for building our network. The network should transform this impedance to  $(50+j0)$  which is the impedance required by the generator. This is normalized to  $(1+j0)$ , which is at the centre of the chart. The network shown is correctly matched, with Gen at the centre. Left-clicking any point on the chart, will display all the data for that point, along the top of the page.

The buttons at the lower left provide more useful information concerning the network.

"Q setup" shows arcs beginning and ending at each end of the centre line, one in the top hemisphere and one in the bottom. These lines can be adjusted for any desired  $Q$  value, but values not exceeding three are most common, unless the filter characteristics of the network are important. If you set the  $Q$  value at 0.65 you will see that the top  $Q$  curve just encloses the C1 segment. This shows that the input of the network has a  $Q$  of 0.65. Adjust  $Q$  values to just enclose the C2 segment and you will see that the output  $Q$  of the network is 2.2



"VSWR setup" shows a circle centered around  $(1+j0)$ . This centre is actually a VSWR of one, indicating a perfect match. The circle encloses the limit of the suggested VSWR around the source point (Gen). A VSWR of two shows a circle with diameter from 0.5 to 2 along the resistance centre line of the Smith Chart. This equates to  $r = 25$  to 100 ohms, which is a VSWR of 2:1 for a 50 ohm system.

"Sweep setup" allows the frequency to be swept between two limits to show the changes to the feed point (Gen) matching. This can be used in conjunction with the VSWR circle to show acceptable limits. Selection of "Sweep setup" activates the "Tabulate" button, which brings up a table showing all measurements at each of the sweep frequencies. This table can be printed or put into a file suitable for including in a spreadsheet or other program.

### Experiments with SuperSmith

To get a feel for adjusting the network values try the following changes.

On the Analyze page change the value of C2 to 135 pF. The C2 curve now extends to the circle passing through  $r = 0.5$ , which is approximately at point  $(0.5-j1.3)$ , and the L curve also increases in length from there to approx.  $(0.5+j0.7)$ . C1 curve now goes from  $(0.5+j0.7)$  to  $(1.3+j0.5)$ . Turn on "VSWR setup" and set it to 1.6 and you will see that the network input (Gen) sits on the VSWR circle. This shows that the network now has a normalized input impedance of  $(1.3+j0.5)$  rather than  $(1+j0)$ . The actual impedance is therefore  $50 \times (1.3+j0.5)$  which is  $(65+j25)$ , which means a series combination of 65 ohms and 25 ohms inductive reactance.

You can see that if the L curve is shortened it may be possible to make the C2 curve get back near the centre of the chart. Change the value of L to 1.4 uH and notice that the L curve now finishes at approx.  $(0.2+j0.45)$  and C2 curve finishes at  $(0.8+j0.25)$ . Now set the VSWR to 1.4 and you see that the source (Gen) lies on the circle. We have improved the VSWR from 1.6 to 1.4, but we should be able to do better.

Once again we can see intuitively that by extending the C2 curve we will be able to improve the matching. Change the C1 value to 320 pF. Now the source is much closer to  $(1+j0)$  – the perfect match. We can do better yet!

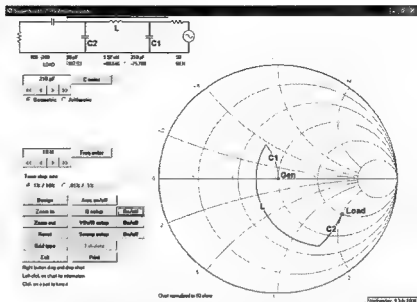


Figure 2 SuperSmith Analyze

Carefully adjust the L and C1 values until the source sits on  $(1+j0)$ . The final values turn out as  $L = 1.435$  uH and  $C1 = 317$  pF. Now check the Q values for input and output of the network. The output Q = 2.7 and the input Q = 1, which were originally 2.2 and 0.65 respectively.

### LTSpice Program (Reference 4)

Selection of components for a matching network is important when high RF power is involved. Voltages and currents can be quite high under certain conditions and you should determine these for

each component where there is RF power, particularly if high impedances are involved. Linear Technology is a manufacturer of power supply modules and has a simulation program called SwitcherCAD III which combines a schematic design program with a Spice analysis program. This combination ideally suits design and analysis of passive networks used in amateur radio. We can specify the power input, frequency, component values, source and load impedances, and get all the voltages and currents in the network.

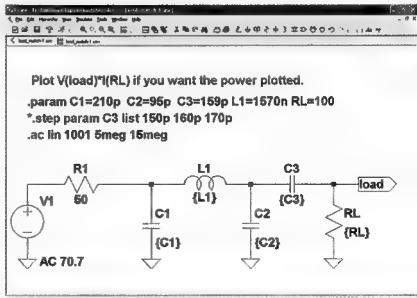


Figure 3 LTSpice Schematic

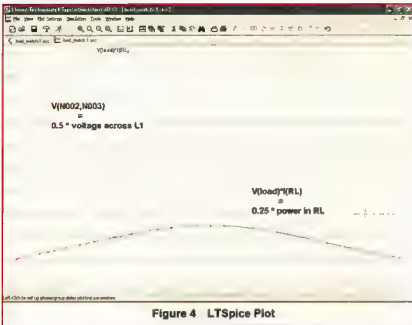


Figure 4 LTSpice Plot

Figure 3 shows the LTSpice Schematic page for the sample pi-network discussed above. The generator is shown as a voltage source V1 of 70.7 V AC and a series resistance R1 of 50 ohms. This simulates a normal amateur 100 W HF transceiver which is designed to match a 50 ohm load.  $P = E^2/R = (70.7)^2 / 50 = 100$  W. The Pi-network consists of C1, L1 and C2. The Load (100-j100) is made up of C3 and RL – remember that at 10 MHz  $159 \text{ pF} = 100$  ohms of capacitive reactance. Our aim is to get the maximum power into RL, which is the resistive part of our load. You will notice that the only component values listed on the schematic are for the source as these will remain fixed values for our tests.

The text lines shown above the schematic are the LTSpice instructions which are necessary for the simulation program. These instructions are in the "Edit" menu. The lines beginning with a "dot" are LTSpice "directives" and tell the simulator what to do. Other lines are blue and are LTSpice "comments" which are helpful to the user, but play no part in the simulation. You will

Once installed, the program requires a schematic designed according to the rules in LTSpice. You will start by selecting "New Schematic" which brings up a blank design page labelled "Draft1".

asc". The "Edit" menu provides all the schematic symbols necessary for your design. Once the design has been made you require LTSpice "directives" to tell the simulation program what to do.



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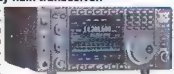


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### Orion II

First independent test data on ORION II released 16 April 2006. "Noted receiver guru Rob Sherwood N0CB of Sherwood Engineering now ranks the ORION II as #1 of all HF amateur radio transceivers ever tested for close-in dynamic range - dating back to the 1970's The original ORION is now listed as #2 overall to the ORION II"



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notice that one line has an (asterisk) in front of a directive. This deactivates the "directive" which follows on that line. The first directive starts with ".param" and assigns values to C1, C2, C3, L1 and RL. The second active directive starts with ".ac" and denotes that we will do an "ac analysis" which requires a linear plot with 1001 points swept over a range of 5-15 MHz. The deactivated directive starts with ".step" and would plot curves for three different values of C3 which is the load reactance (-j100) if the asterisk was removed. Right-clicking the cursor over any text on the schematic page allows you to change the text. The curly brackets around any component value tells the simulation program that a "directive" will assign a value to that component—for example L1 is assigned 1570 nH by the ".param" directive.

Figure 4 shows the LTSpice Simulation page resulting from the schematic. This page can be launched from the schematic page by right-clicking a blank area and selecting "Run" from the menu. This menu also allows you to choose which "Visible Traces" are plotted. By hovering over a component the cursor changes to a "clamp ammeter" and a left-click will measure the current through that component. Similarly, if you hover over a node the cursor will change to a "probe" and record the voltage. If you hold the left-click button on node 2, and drag the cursor to node 3, then release the button the simulator will record the voltage difference between nodes 2 and 3. I have added text alongside the curves to explain what they show, but normally you would only see the two values shown above the chart, that is,  $V(\text{load}) \cdot I(\text{RL})$  and  $V(\text{N002}, \text{N003})$ .  $V(\text{load}) \cdot I(\text{RL})$  is the voltage across RL multiplied by the current through RL, that is, the power dissipated in RL.  $V(\text{N002}, \text{N003})$  is the voltage difference between schematic node 2 and node 3, that is, voltage across L1. Node 0 (N000) is always the common reference point as shown by the down-pointing arrows.

The Y-axis shows a scale from 0–100 and the X-axis is scaled from 5–15 MHz. These scales can be changed by left-clicking on the axis. The added text shows that the values plotted are not the values actually produced in the "real-world" case, but the shape of the plots is true. The reason for the lower values shown are due to the 50 ohm

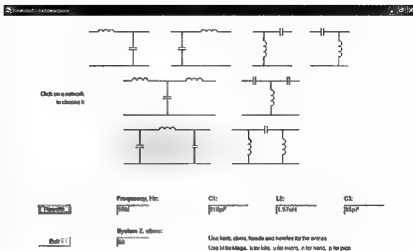


Figure 5 RevLoad Entries

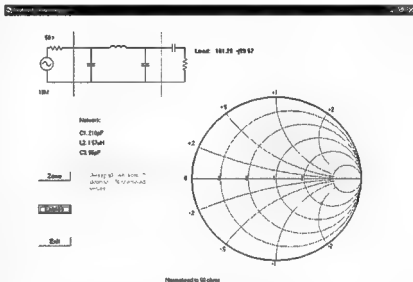


Figure 6 RevLoad Results

resistor (R1) included in the schematic. When the network matches the load to 50 ohms (50+j0) the voltage at node 2 is actually half the voltage at node 1 (V1), because the matched network + load looks like a 50 ohm resistor. Because power is proportional to E and I, the plotted power is reduced to 0.25 of the "real-world" value.

You can see that the power curve peaks at 25, which corresponds to 100 W in the "real-world" case. This shows that the maximum transfer of power occurs at 10 MHz, as designed. At 10

MHz, the voltage across L1 is plotted as 84 V which equates to a "real-world" value of 168 V. If the inductor is wound on a powdered-iron toroid, the voltage is related to both saturation and heat dissipation in the core, and will depend upon the core size and material. This can be checked by the program "minirk.exe" (Reference 6) for safe operating values.

### RevLoad Program (Reference 3)

If you do not know the load impedance connected to your network, but can

measure the component values of a correctly adjusted matching network, this program will produce the complex impedance of the load. An antenna analyser (Reference 1) can check for correct matching and also measure component values, and since it operates at very low levels, any sized components can be used in an "ugly/paddyboard style" network for initial tests. Where an existing antenna tuning unit (ATU) has been adjusted for best SWR without knowing the actual load impedance – as usually happens with an ATU – you can use an LC Meter (Reference 2) to measure the component values at that point.

Figure 5 shows the "Entries" page where you can select the type of network and enter the values and frequency. This page shows the values for our Pi-network at 10 MHz.

Figure 6 shows the "Results" page, which includes a schematic and simple Smith Chart. The Load is shown to be (101.3 – j99.6) which is close enough to our (100 – j100) and is plotted on the Smith Chart at normalized (2-j2). At 10 MHz (–j100) converts to approximately 159 pF.

## Minirk Program (Reference 5)

See Figure 7. This program calculates the operating conditions for an inductor wound on a Micrometals iron powder toroid core. If the specified conditions are within safe limits of core flux density and/or temperature, the program displays the results in black, otherwise results are in red. The picture shown uses our example of a 100 W transmitter with a pi-matching network which has a 1.57 uH inductor wound on a Micrometals T-130-6 core, operating at 10 MHz and with 170 V across the inductor. You can see that it takes 13 turns to get the required inductance on this particular core. The flux is 41 G (4.1 mT) and the temperature rise is 39 C due to core loss of 3.46 W. This inductor is operating within safe limits, but care should be taken to make sure that the heat can get away – think how hot a 5 W resistor gets when it is dissipating 5 W. The temperature rise is calculated for a 100% duty cycle, whereas the normal amateur duty cycle is 50% maximum. The reduced duty cycle would allow the core temperature to show a rise of 70-80 C and still be within safe limits. The flux should never exceed the value shown

Figure 7 Minirk

under "max. Flux", as the core could be driven into saturation.

To see the effect of choosing the wrong core, try selecting a T-130-2 with the same operating conditions. The inductor now requires 12 turns, the flux has increased to 43, the temperature rise is 93 C, and the core loss is 9.69 W. This core is obviously not suitable due to the temperature rise. Try other sizes/materials and see the changes.

Now try selecting a T-130-0 core. You will see that the core loss and temperature results are disabled and that the turns required are now 32. This is because the "0" material is a low loss phenolic (ui = 1, same as air), and is not ferromagnetic. The toroid shape has advantages over a normal airwound inductor since the external magnetic field is reduced, which results in less coupling with adjacent components.

## Conclusions

All the programs mentioned here are free for amateur use. Using these programs provides an understanding of how combining C and L components interact with input and output impedances. The

simplified Smith Charts shown in the programs may even be a revelation.

Special mention must be made for the programs supplied by Jim Tonne, only two of which I have covered here. See his website for other useful programs (Reference 3).

Linear Technology have several simulation and analysis programs listed on their website (Reference 4).

Another network calculator covering 16 possible network configurations is also very interesting (Reference 6).

## References

1. VK5JST Antenna Analyser, [www.scarc.org.au](http://www.scarc.org.au)
2. "Digital LC Meter", *Silicon Chip*, May 2008
3. Jim Tonne, <http://tonnesoftware.com/>
4. Linear Technology, <http://www.linear.com/designtools/software/>
5. Wilfried Burmeister, <http://dl5swb.de/>
6. John Wetherel, [www.rfengineer.net/match1.htm](http://www.rfengineer.net/match1.htm)
7. vk2wb, ron.kuama@gmail.com

# The Freq-Mite:

## *a you-beaut enhancement for your QRP rig*

Grant McDuling VK4JAZ

Operating a QRP station can be, at the best of times, challenging. That is half the appeal as far as I am concerned. It is when working a 'normal' station that it often gets difficult.

'QSY to 7006' is a request that is just about impossible to comply with, especially if you are operating a rig that you built yourself. I say this because the vast majority of QRP kits do not feature accurate digital frequency readouts like so-called big rigs do.

So what can be done to rectify this?

Until recently, there was nothing much that I could do to QSY to a particular frequency other than guessing the rough whereabouts on my analogue dial. But as I became used to operating thus with my Small Wonder Labs SW40 CW rig, I began to dream of enhancing my set up so that I could indeed add to the functionality of my operating set up in my shack. So I began to research options regarding frequency counters and how I could build one as an enhancement to my rig.

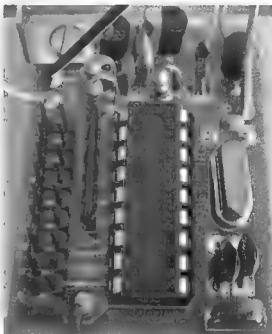
A quick look at the Small Wonder Labs web site (<http://www.smallwonderlabs.com/>) revealed a kit that looked just the thing I needed. Called the Freq-Mite, this little kit was billed as a Morse readout frequency annunciating device that is user programmable and readily adaptable to the IFs in most QRP rigs. It can count the frequency up to around 32 MHz with an accuracy of around two kHz. The output of this device is at either 13 words per minute or 26 words per minute.

The device is built around a pre-programmed I6C622A IC, a 6-pin resistor network and a dual row jumper strip upon which you attach a number of jumpers according to the actual IF of your rig. The instructions guide you through what you will need to do, and is very easy to follow. I had no difficulty at all sorting this out.

I followed the instructions to the letter and hooked the kit up to my rig as suggested. When I applied the power and pushed the normally-open pushbutton switch that I mounted on the front panel of my rig, I was amazed to hear, in three digit Morse code, the frequency that the

rig was tuned to. I swung the tuning knob of the rig to one extreme and pushed the knob again. 003 was heard in my headphones. I tuned to the other extreme and tried again. This time I heard 040. So now I knew my rig operated between the frequencies of 7.003 and 7.040 MHz. Fantastic! On air tests proved the Freq-Mite to be remarkably accurate.

Now I am able to QSY to whatever frequency I am asked, as long as it is within the tuning capability of my little 3 W rig. This really is QRP heaven. All of this for just \$22. It really does not get much better.



af

Photo 1 A close up view of the Freq-Mite itself.

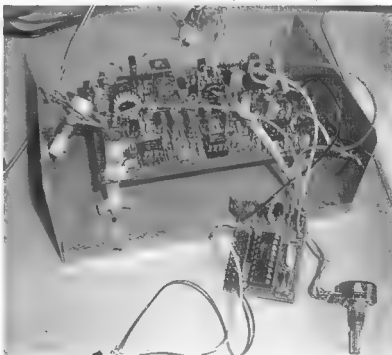


Photo 2: The Freq-Mite connected to the Small Wonder Labs SW40 CW rig

# Handheld with the lot: the IC-92AD

Peter Freeman VK3KAJ

**Waterproof, 2 m & 70 cm, D-STAR, in a dual band 5 W handheld transceiver – what more do you need? GPS? World Wide Coverage? Done!**

The IC-92AD is a dual band (2 m and 70 cm) five watt D-Star handheld transceiver that features D-Star and full traditional analog voice capability, but a swag of features.

The receiver gives wideband reception options as well, as can be seen from Table 1. Standard transmit operations are FM and Digital Voice (DV) modes, with DV only available on band B.

With the addition of an optional HM-175 GPS microphone, you have comprehensive GPS operation, which beacons positioning data via the international D-STAR and APRS networks. It also displays and transmits

local positioning data with other D-STAR compliant radios, in terms of position, elevation, distance and direction: functions which are performed extremely well by both the IC-92AD and its big brother IC-2820H mobile.

It is easy to assemble the radio on opening the box – in the most basic form, simply connect the battery pack to the transceiver and screw on the SMA connector whip antenna. Just to be sure, charge the battery pack. Also supplied are a wrist strap and a belt clip, which requires the fitting of two supplied screws.

The BC-177 provides capability of rapid charge of the BP-256, typically about 2.5 hours. This charger is an optional extra. The transceiver is supplied with a standard "wall wart" style charger.

The BP-256 battery pack is a 7.4 V 1620 mAh Li-Ion pack, giving 5.5 to 6 hours of operation time when on high power (5 W). If you switch to Low power (0.5 W), battery life is quoted as 14.5 hours. Mid power (2.5W) will typically give you around 8 hours of operation – plenty of time for an average day out. Using the standard charger, charging time is approximately 6 hours. This will be achieved only if the radio is off during charge – leaving the radio on will result in an incomplete charge or require a longer charging time. Another available option is the BP-257 battery pack, which will hold six AA alkaline cells. Whilst this pack may be an attractive option, its use drops power output to typically 0.1 W.

In addition to use with a battery pack, the IC-92AD can be used with other supply lead options, up to a standard 12 V supply: specified supply limits are 10.0 to 16.0 V.

The transceiver has a large clear display showing many status icons – all together, there are 18 items which can be displayed, depending upon mode of operation. It can be multi-configured as either a single band or a dual watch display – displaying the frequency or memory name in actual use when in single band mode, or the frequencies or memory names of both bands when in dual band mode.

Photo 1 provides a view of the IC-92AD with HM-175GPS attached, with the display in "dual watch" mode. If you select memory name mode then you can display the repeater callsign, locations or simplex names etc via alphanumeric tagging capability.

Below the display, there are a number of control buttons: at the bottom portion of the unit is a five wide by three deep keypad array. Between this keypad and the display are four buttons – a larger "Main/dual" button, the power switch, and two buttons for Band and Menu.

Having assembled the transceiver and

ensuring that the batteries are charged, it is relatively easy to set up a local simplex or repeater frequency if you have used earlier Icom handheld radios. This is because of the consistent style of control ergonomics used by Icom. A newcomer may find the system a little confusing, but it is easy to learn the basics. Colour coding of the multiuse buttons assists in the learning process.

Many of the main keypad buttons have three or even four functions each, with each function colour-coded. The function of the key will depend upon the current context and the length of duration of depression of the keypad – a momentary press gives the black operation (for example, entering a numeral), whilst a press of longer than one second will give the purple colour-coded function. It does not take long to get the hang of this menu system intuitively but a radio with this level of functionality, needs the operator to read the manual...at least once.

To assist you, this operation is clearly outlined on pages 4 and 5 of the operating manual, which has 156 pages in total. A further option for the appropriate buttons is the sending of a corresponding DTMF tone, which occurs if the button is depressed whilst the PTT is activated.

The keypad summary chart, as well as pages 2 and 3 indicating the names of each of the controls, has links to the page of the manual which gives the detailed description of the function in question.

This is relatively straight forward for normal FM operation.

On the other hand, it is best to read the manual if you intend using the radio on the D-STAR system, simplex or via one of the repeaters. The standard mode of Digital Voice (DV) can only be activated on the B VFO (or band). Like all Icom D-STAR transceivers, you will need to set up a number of parameters such as your callsign (mycall) and a few other details of any repeaters that you wish to access. The D-STAR Australia web site (<http://www.dstar.org.au>) has lots of

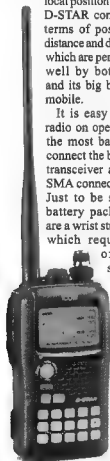






Photo 1: The IC-92AD and optional HM-175GPS, with the display in "dual watch" mode.

GPS receivers when operated for the first time – they need to acquire the location of the receiver from the GPS satellite constellation. The manual has 11 pages describing the various options available when operating with either the HM-175GPS or an external GPS receiver. I set the unit up for GPS Mode, a simple position display, as can be seen in Photo 2. This photograph was taken whilst on a walk one damp afternoon along a local path. Despite the tree coverage, with all the leaves being wet and acting as RF attenuators, the GPS was reporting position at all times.

In GPS mode The IC-92AD can also show the compass direction of a received D-STAR station, its position and distance

away or to a memory stored with a compass-like display pointer.

On further exploration I found that in another mode GPS - A mode, the IC-92AD can beacon your position data, to the nearest D-Star repeater within range. This is known as DPRS, a cousin protocol to APRS. The data will then be processed and sent to the APRS system via the internet and to various web sites for information and map display, like Google® maps, Jfindu and aprs.fi Note: With all WIA D-STAR repeater systems, and many of the club systems, the DPRS position data is interfaced into the APRS system. DPRS stations can be viewed on software map packages like UI-View®.

I had no qualms taking the unit with me for a walk that afternoon, despite the scattered showers. I did not even need to worry about keeping the transceiver out of the rain – the IC-92AD is waterproof to IPX7 standard – Icom claims that it will tolerate immersion in water up

to one metre deep for a period of 30 minutes. I have seen the IC-92AD immersed in water at about 40 cm depth for at least three hours at a hamfest. At the end of the day, the staff simply removed the transceiver, shook off the water and the radio worked perfectly. The main unit, the BP-256 and the HM-175GPS all comply with IPX7. What does that really mean – there should be no problems with exposure to rain or dropping the unit into a shallow pool of water. Note that the BP-257 Dry Cell case is not waterproof.

Having had an initial exploration of the transceiver and its basic functions, it was time for deeper examination of the capabilities of this transceiver. This is possible without resort to the manual for many functions, but it is recommended that you spend some time reading.

One obvious place to start is to program some commonly used frequencies into memory. This is one place where you have plenty of choice – there a total of 1304 channels, including 100 program scan edges and 4 call channels, with the memories arranged in 26 banks. This may seem to be a little daunting at first, but Icom also have that aspect covered. The first step is to purchase the optional RS-92 remote control software, which includes the OPC-1799 RS-232C PC connection cable. The next step is to download a configuration file from the Australian D-STAR website, which gives you a standard setup file which includes all the standard repeater and simplex frequencies used in Australia, including CTCSS tones if needed. Both FM and DV operation frequencies and memory naming are configured in this file. All you do is select the corresponding file that matches your local repeater and that is it. You can modify the file once you have opened it in the RS-92 software. Once you have configured the memories in the software package, it is then a simple matter to connect to the IC-92AD via the OPC-1799 cable and to transfer the memory settings to the transceiver. Most functions of the transceiver can be controlled via the RS-92 package. If you are using the DV mode, you can use the package to send and receive short text messages (up to 20 characters) via the PC.

Downloading the file made the radio really easy to use, because of the well structured memory channel plan. Each

helpful information for the newcomer. It also has files you can download and program into the IC-92AD, or any other D-STAR radio. These are setup for each Australian state, thanks to Dave Tilson VK3UR. Do not forget to register on this website so you can be enabled for gateway operation to explore the full capabilities of the international D-STAR network.

The international network now has 350 plus repeaters around the world and is growing at a fast rate. Once registered, you can call anyone with D-STAR equipment around the world, just like calling on your local repeater, but also send SMS data and position data, all simultaneously with the IC-92AD.

One area of interest to explore was GPS operation.

A few minutes reading the relevant pages from the manual and following the instruction resulted in the GPS display operating correctly. It took a few minutes for the receiver to initialise, as do all

D-STAR repeater and each Australian analog repeater has a channel allocation. All you need is a WIA repeater list and to turn on the radio. Repeaters can be selected by frequency, callsign or name.

For example, if you want to talk to a friend in Kent, Southern England, on DV mode, just turn to channel 143, or to call a friend in Munich Germany, just turn to Channel 124, a friend in the Ozark Mountains Missouri, that is Channel 323 and just give them a call.

In next year's WIA call book, Icom and the D-STAR Users Group will supply a full listing of national and international D-STAR repeaters, information and configurations.

The receiver has a simple bandscope function, which will show the received signal strength on the display, with any received audio audible via the speaker whilst the scan is in progress.

When using the DV mode, you can record up to 30 seconds of audio from an incoming call to memory – as a single file or up to three files of 10 second duration. You can record up to ten seconds of audio for use for outgoing calls – for example your callsign and a CQ message. The IC-92AD also has auto messaging system, if a D-STAR station directly calls you via callsign routing, your IC-92AD has the ability to call the calling station back with a voice reply, like an answering machine.

The IC-92AD has several other features that I did not explore. There are 10 DTMF memories, each storing up to 16 digits. This will simplify often used DTMF operations, such as accessing EchoLink or IRLP nodes. There are Power save, auto power off and power on functions, all of which will extend battery life. A time out timer can be set for 1, 3, 5 or 10 minutes, with the timer giving you a beep warning 10 seconds before the timer disables the transmitter. There are many other features which can be useful in many circumstances – one just needs to read the manual to understand how they operate.

Of course, if you happen to make a major error in making settings and

are hopelessly lost, you could always resort to initiating a master or partial reset of the transceiver. Hopefully it will not come to that! A partial reset will save your stored memories, whilst resetting all other functions to the factory defaults.

The transceiver was a delight to operate. I received good audio reports at all times. Whilst I did not attempt to transmit on DV mode, the signals received in DV mode provided clear audio. The transmitter can be set to 5, 2.5, 0.5 or 0.1 W. The receiver sensitivity depends on the frequency in use, but is quoted as 0.14  $\mu$ V near 2 m and 0.16  $\mu$ V near 70 cm for FM (12 dB SINAD and 3.5 kHz deviation) and 0.22  $\mu$ V for DV mode on the amateur bands (1% BER). For detailed specifications, request a brochure from your local dealer or see the Icom website at <http://www.icom.net.au/>

If I were currently in the market for a handheld transceiver, the IC-92AD would be at the top of my list.

At the time of writing, the IC-92AD was available for \$695 "whilst current stocks last". I am sure all are aware that the Australian dollar has depreciated considerably in the last few months, so prices are sure to vary. The optional HM-175GPS can be found for around \$395 at present, but the same caveat applies. To be safe, check with your local Icom authorised dealer for current pricing.

I thank Kitty at Icom Australia for the loan of the IC-92AD and HM-175GPS.

Photographs by the author



Photo 2: The IC-92AD and optional HM-175GPS displaying the current position using the GPS-A function. No need to worry about dampness or rain drops with this radio, rated waterproof to 1 m depth for up to 30 minutes.

## Hello, my fellow Australian amateurs,

The IC-92AD repeatedly amazes me by the number of features available.

Being with Icom, I haven't purchased many rigs for myself, however I love the IC-92AD and have owned one for about 3 months,

It is a small wonder. Can I suggest that all users please read the manual in earnest, do some experimenting and then read the manual again!

As I did! There are support/user groups around. Don't forget to look at [www.dstar.org.au](http://www.dstar.org.au) for all your D-STAR info and to register for gateway access. On the site you can also register to be part of D-STAR Lists forum, so any questions can be answered promptly by experienced 92 and D-STAR users. Icom also glances at the list so if we can be of help, or to clarify things, we are there!

73, Peter VK3TQ Icom Australia

Table 1: Transmit and Receive coverage specifications

Transmit (MHz)	Receive (Working range) (MHz)	Mode
144–148	A band: 0.495–999.990	FM/WFM/AM
420–450	B band: 118–174, 350–470	FM/FM-N/AM/DV

The **Central Coast ARC** conducted their annual field day at the Wyong Race Course in early February – the 51st event – on one of our warmer weekends. Attendances were good with bargains everywhere. The club and its team of workers have to be thanked for their time and effort in making it an enjoyable time for the attendees at what is Australia's biggest annual amateur radio event.

Just before Wyong – late January – the **Mid North Coast ARG** conducted their now annual Expo in Coffs Harbour. Also a well attended event, it will be moving next year (January 2010) to a larger venue advises Gary VK2ZKT. The MNCARG have been testing their new 2 metre repeater in a temporary location servicing the Coffs Harbour city area. When relocated to its final location, coverage is expected to extend from Yamba to the north, down the coast to Port Macquarie. It is on channel 6750 with 3 minute timeout and Morse ID at the 10 CTCSS intervals. It requires a 123 Hz CTCSS tone. It also supports IRLP node 6625 and Echo Link node 359211. Website: [www.mncarg.org](http://www.mncarg.org)

The **Oxley Region ARC** got early access to their new meeting location at the recently constructed SES Headquarters in Central Road, Port Macquarie. It had been expected that February would have been the first access but the building was completed early, so they have been meeting there since early January. They have their formal monthly business meeting on the first Saturday afternoon and the informal gatherings on the second and fourth Friday evenings. Website [www.orarc.org](http://www.orarc.org)

**Waverley ARS** had a nine day activation of special event call sign V12BV90 for their 90th anniversary. (The club was founded on the 26th January 1919). 631 contacts were made in the nine days of operation on HF, VHF and UHF, including 17 satellite and two with the ISS. There were 110 DX contacts while band conditions were not at their best. QSL cards are being sent by either the return envelopes supplied or the bureau. Waverley lay claim to

being the oldest Australian radio club. Waverley has a project afternoon on the first Saturday and a meeting on the third Wednesday evening of the month. Website [vk2bv.org](http://vk2bv.org) or [Simon.VK2UA](http://Simon.VK2UA) on 02 9328 7141.

**Liverpool and District ARC** are planning an antenna building workshop to make a 2 metre Flower Pot antenna on the weekend of the 28/29th March at West Hoxton. Contact Gary VK2BR by email [vk2tsr@bigpond.com](mailto:vk2tsr@bigpond.com) or in the evening phone 02 9896 5763. The Flower Pot is a design by John VK2ZOI from HADARC.

**Hornsby and District ARC** have Standard and Advanced exams on 7th March. Contact Tony VK2BTL on 02 9487 3383. Website: [www.hadarc.org.au](http://www.hadarc.org.au) They meet on the second and fourth Tuesdays at Mount Colah.

**Hunter Radio Group** meets on the second Friday evening at NBN TV studios Newcastle. Early last month they resumed the Monday evening VK2AWX news bulletin at 7.30 pm on 3593 kHz and local area repeaters.

**Mid South Coast ARC** had their first quarterly meeting for 2009 at Milton on the second Saturday in February. The next meeting is in May. Their 2 metre repeater on 6700 has resumed operation from a new location.

Some of the regions of **NSW WICEN** have AGMs coming up. Northern Rivers on April 5th and Central Coast on 11th April. Telephone contact with NSW WICEN 0408 397 217 or the website [www.nsw.wicen.org.au](http://www.nsw.wicen.org.au)

The **annual Urunga Easter Convention** will be held in April at Urunga on the Mid North Coast of VK2 over Saturday and Sunday, the 11th and 12th. Check out their website.

The **Kurrajong Radio Museum** was featured in VK2WI news during the summer sessions which tempted a group from HADARC to visit at the end of January. Other amateurs have also made individual visits. Late last year the ABC TV Collectors program had a camera crew pay the Museum a visit. The segment that was recorded has

been scheduled for a showing on Easter (Good) Friday, 10th April. The Museum on the Bells Line of Road, Kurrajong Hills, is open most weekends from 10 am to 5 pm and group visits can also be by appointment at other times. Telephone 02 4573 0601, email [vk2zio@yahoo.com.au](mailto:vk2zio@yahoo.com.au) or the web page – do a Google search on 'Kurrajong Radio Museum'.

This month is the 99th anniversary since the WIA came into existence as the result of a meeting called and held in Sydney NSW to form an "Institute". A group of Experimenters came together at the Hotel Australia, Sydney in March 1910 to discuss the high cost of the annual licence (then One Pound) and the delays in granting "experimental" licences. From that meeting came an "Institute" which is today, the world's oldest national Amateur Radio Society. We are two years ahead of the RSGB (1912) and the ARRL (1914).

This month the NSW Division is calling for nominations for the Council for the 2009/2010 year, which, along with agenda items and notices of motion for the Annual General Meeting, close at noon on 7th March 2009 at the Dural office, 63 Quarry Road, Dural. The AGM will be held on Saturday 18th April 2009. The venue is yet to be confirmed. Members are reminded to make sure they are financial for the meeting, nominating or submitting notices. Renewal notices up to and including April, have been sent out. You can check by a phone call to the (office) message bank 02 9651 1490 or an email to [vk2wi@ozemail.com.au](mailto:vk2wi@ozemail.com.au) Members will receive the various notices and paperwork for the AGM by either post or email as previously arranged. The postal address is P. O. Box 6044, Dural Delivery Centre, NSW 2158. It should be noted that Amateur Radio New South Wales is only a trading name adopted by the WIA NSW Division and does not formally meet or conduct business under that name.

The 'shed' for the Dural site was under way as these notes were being prepared. There will have been work during February in completing the project up

to formal approval stage when we will be able to move in and start some of the fit out.

Work continues at the VK2W1 station to install a refurbished transmitter to the HF AM service. The transmitter being readied was designed for broadcast band duty so it will be placed in service on 160 metres. The former 80 metre AWA J54/800, which developed shorts in the rubber shielded wiring has been

removed and has found a new home as a (future) museum exhibit – no, not at Kurrajong – and the existing 160 metre AWA Tx will move up to 80 metres which is more suited to its design range. It had to be modified to get down to 1845 kHz. Our AWA J54/800s were first commissioned in 1951 and saw service in aviation at Coffin Harbour before being decommissioned and finding their way to VK2W1 round about 1980.

Sunday 25th of this month will be the next Trash and Treasure and Home Brew gathering at VK2W1. By then, there may be access to the new shed for shelter and a get together. The weekly VK2W1 News bulletins will advise. Remember, if you have news for inclusion in the bulletins, email it to [amews@tpg.com.au](mailto:amews@tpg.com.au) by Friday afternoon.

That is it for the month.  
73, Tim VK2ZTM.

## Oxley Region Amateur Radio Club

### EMERGENCY COMMUNICATIONS

With all the disasters around the world, it is not unreasonable to suggest that one day we, as radio amateurs and communicators, will be called upon to assist in some unforeseen tragedy.

The Oxley Region Amateur Radio Club (ORARC) at Port Macquarie on the mid north coast of New South Wales, has, for many years, used the local State Emergency Services (SES) HQ for their local meetings. Here they had a room to store equipment and even put up antennas and air their club station, VK2BOR.

Unfortunately the building was condemned by local authorities, but with a promise to build new premises for the SES. Unfortunately this did not include the ORARC. Disaster? No, to the contrary. A number of members of

the ORARC volunteered to join the SES and take over the Communications Department (Some of them are too old to climb a roof, but they certainly know how to use a microphone!). They now have a very modern building in which to meet and at the same time provide a community service. Last October those who had signed up underwent an SES induction examination in preparation for their new voluntary work.

The new building is now complete and SES equipment is being installed. Although operational, the official hand over is not scheduled until March. We hope to have photos of this event to include in AR. In the meantime the new recruits will be undergoing new communications skills to complement

the new operations room. No more five minute overs!! It is GRN discipline.

Although a long way down the track, consideration of use of the two local VHF/UHF amateur repeaters in the area will have to be looked at. In a disaster where SES communications could be overloaded and cell phones inoperative, the battery-operated repeaters may be extremely useful. In an emergency they could be used for SSTV or other digital modes to provide on-site information. We are now in the year 2009!

The ORARC meet on the first Saturday of each month. Visitors are most welcome. For more information contact the ORARC Secretary, Jim Neil VK2VIV, on 6581 2481 or visit the ORARC web site.

David Pilley VK2AYD

## VK5

Christine Taylor VK5CTY

### ADELAIDE HILLS AMATEUR RADIO SOCIETY

December and January were filled with social activities, a luncheon on 7th December and a picnic on 17th January. Both were very well attended (50+) and a good time was had on each occasion.

The first formal meeting for 2009 was the AGM on February 18th. In March we will have a member's Buy and Sell then in April we will have a normal meeting.

If you are in Adelaide at any time,

always contact either John VK5EMI or David VK5KC (previously VK5AMK) QTHR the callback. They will be able to tell you the venue and the speaker for the next meeting.

All the regular meetings are held in the Belair Community Hall at the top of Belair Road. Meetings start at 1930 with the speaker going first and the formal part after the break for tea and coffee.

ar

**John  
Moyle  
Memorial  
National  
Field Day  
March 14 and 15**

## VK7

Justin Giles-Clark VK7TW

Email vk7tw@wva.org.au

Regional Web Site reast.asn.au

### Meet the Voice & Sewing Circle BBQ

In the Midlands town of Ross on Sunday March 22nd will be the "Meet the Voice" and Sewing Circle BBQ. The Ross Caravan Park is the venue and you are most welcome to come up early and book into the caravan park and make a weekend of it. Registration is from 10 am for the BBQ and events and the cost is \$5.00 for individuals and families. Free BBQ facilities are available. For more details have a chat with Don VK7AY on the Sewing Circle Net which occurs at 5 pm on 3.589 MHz every day. There will also be a Bargain Boot Bonanza for pre-loved amateur radio related equipment at the BBQ starting at 12 noon. Ray VK7VKV is the organiser and all you need to provide is a table or boot to display your goods.

### WIA National Broadcast Milestone

January 2009 saw VK7 move into a select group of over 1000 check-ins on a repeater. VK7RAD/RHT reached 1004 check-ins for the WIA broadcast year on

January 4. The group we enter includes VK5RAD, VK6RAP and VK4RSC. Considering the number of amateurs in VKs 4, 5 and 6, I think VK7 is doing very well.

### VK7 Hosts Annual Linux Conference

Thomas VK7NML let me know that the University of Tasmania hosted the annual Linux Australia Conference which attracts about 600 delegates every year. The conference attracts many big names, including this year Linus Torvalds who wrote the first version of the Linux operating system. There were many amateurs attending including Karl VK5FOSS and Kim VK5FNET who were heard on the local repeaters.

### North West Tasmanian Amateur Radio Interest Group

The annual general meeting of NWTARIG was held on January 31st 2009 with the following office bearers being elected: President – Anne VK7BYL, Vice-President – Dick VK7FORF, Secretary – Brian VK7FAYE, Treasurer – Vernon VK7VF and Committee member – Winston VK7EM. The new committee is working towards revitalising the club, by introducing practical

training days and social activities. A reminder of the regular Tuesday "natternet" at 8 pm on VK7RMD, Mt. Duncan which is followed at 9 pm by a replay of the WIA national news broadcast courtesy of Winston.

### WICEN South Tasmania

Thanks to Tad VK2LNX/7 and Suzy VK2FSMJ/7 who for the last few months have been honorary lighthouse keepers on Maatsuyker Island (OC-233) in the deep South of VK7 and talking with other amateurs during the regular Maatsuyker Net. Regulars included VK7s ARN, JGD, MAX and FEET, with occasional contacts with FCDW, AN, FMPR, EE, TPE, HSE and Andy VK7WS who is lighthouse keeper at Cape Bruny. February 20 and 21st will see WICEN involved with the horse endurance ride at Orford on the East coast.

### Radio and Electronics Association of Southern Tasmania

A big thank you to Charles VK7PP who for many, many years has been involved with the 20 m rebroadcast of the VK7 Regional News each Sunday. Charles and his wife have down sized their QTH and the 2 element quad for 20, 15 & 10 and tower have gone to a good home. Good luck and thanks Charles.



A group of amateurs at the Linux Conference. L to R: Geoff, Karl VK5FOSS, Kim VK5FNET, David VK5DGR, Julien VK3FABR and Neale Ex-VK3XJH at the Conference (Photo by Thomas VK7NML).



Wednesday Afternoon Group – VKs 7DM, 7KRW, 7IR, 7TAS, 7TL, 7MF, 7RO, 7HK, 7BRY & 7JK (Photo by Dave VK7DM).

Congratulations to Gary Wilmott who gained his Standard theory at the January 13th exam event. If you are interested in a Foundation or Standard licence training or any assessments then please let Reg VK7KK know on mobile: 0417 391 607 or email: regemm@ozemail.com.au

The Wednesday afternoon group is back in full swing and meets at the Queen's Domain clubrooms from around

12:00 noon to 4:00 pm every Wednesday. One and all are most welcome to come up, bring your lunch and discuss anything and everything!

ATV Experimenters Night on Wednesdays at 7:30 pm in the ATV Studio, Queen's Domain has also kicked off again with some great content from Amateurlogic. TV and many other sources including some great live material, interviews and

satellite feeds from NASA.tv (see dish above!). We are starting to experiment with digital ATV thanks to Jack VK2TRF and hope to report in future columns.

**Errata:** The chart on page 37 of the January/February 2009 edition of this column labelled "VK7WI Broadcast Callbacks 2001-2008" statistics had an axis mislabelled "Total Number" should have read "Weekly Average".

## WICEN Tasmania (South) Inc

Roger Nichols VK7ARN

The group's purpose is to:

- establish and maintain a core group with a voluntary public service and emergency radio communications capability of the highest possible standard, and to
- work with the broader radio interested community (not exclusively amateur radio) to extend that capability.

In recent years, the emergency radio communications aspect has been confined to providing radio operators for multi-agency Incident Management Teams established to deal with major bushfire emergencies. The frequency of these activations is likely to increase following changes to Tasmania Fire Service protocols.

To better prepare for the role, WICEN requested the Tasmania Fire Service to run a training course on Fire Service systems and procedures, tailored for Incident Management Team

radio operators, especially those with experience in amateur radio. This took place on 9 December 2008 at the TFS Training Centre, Cambridge. Fourteen

completed the course and assessment, which is expected to result in them being awarded nationally recognised certificates of competency.



The participants, from left to right: VK7s ARN, JGD, Sarah Welch, TPE, IR, CSL, FCDW, FEET, MAX, NXX, TRF, HSE, HSB and BDW.

## WICEN says thanks to XYLs

WICEN Tasmania (South) Inc. enjoyed an end of year function by taking a leisurely lunch at a restaurant in the Huon Valley. The function was organised primarily as a means of saying thank you to XYLs for putting up with radio play time over the past twelve months, but also just because.

Its purpose was

extended, and an excuse given for a bigger cake, by the birthday of one of

the guests, Technical Advisor Dave VK7DM.



Liz (XYL of Chris VK7FCDW), Dave VK7DM, Richard VK7RO and XYL Ruth, Roger VK7ARN



Garry VK7JGD with XYL Michelle.

## GEELONG AMATEUR RADIO CLUB – The GARC

Tony Collis VK3JGC

### WIA Summer VHF/UHF Field Day

This year GARC members had an unprecedented five teams in the Summer VHF/UHF Field Day event.

#### Team 1: VK3UHF/LUMEG

This was once again the most successful team since the inception of the 24 hour

multi operator class, having won every field day in this class, bar one when they came second. The location this year was Barabool Hills at QF21cu and covered 50 MHz through to 24 GHz. The operators were once again David VK3QM, Chas

VK3PY and Charles VK3NX.

Subject to confirmation, the team believe they exceeded their previous score comfortably.

#### Team 2: VK3TU

Hot on the heels of Team 1 was 24 hour multi operator team of Ken VK3NW and Bert VK3TU operating from Hick Hill, QF01wx, west of Macarthur.

Their chosen bands were 6 m through to 3 cm and they achieved, subject to confirmation, 4,600 points. This would have been considerably enhanced were it not for the fact of being forced to spend time at the local pub and the distraction of a hot and dusty location on a cattle farm that they had to share with circa 40 million flies!!

#### Team 3: VK3ALB

This was very much a family affair with Lou VK3ALB, Jenni VK3FJEN,



The Yagis and dishes used by VK3UHF/LUMEG during the contest.

## Urunga Radio Convention

Come to the 'Urunga Radio Convention', on again this Easter weekend, **Saturday 11th and Sunday 12th April 2009**, in the 'Senior Citizens Hall', Urunga.



Urunga 2 metre pedestrian foxhunt entrants 2008

The longest running Fox Hunt Field Day in Australia, two days of 'Fox Hunting', quizzes, raffles, and pre loved gear, displays.

*Inquiries welcome.*

Free tea and coffee available for all registered attendees. Numbers are required for the optional meal on Saturday night at the Bowling Club – please notify the Committee.

The old cups from the early days are on display at the convention, and other times at the 'Ocean View Hotel', where some of the early conventions were held.

An adjoining lounge is available for those that want to get away from the activities.

'Urunga' is a quiet village ideally suited to 'Fox hunting'. It is a very relaxing environment on the Kalang

River, and has old style charm, ideal for families.



Old Trophies from early Urunga conventions 2008

Close by are Coffs Harbour and Bellingen, or perhaps a drive on 'Waterfall Way' to Dorrigo and the National Park Skywalk, picnic areas and lookouts.

Visit the golf or bowling clubs, or walk to the Ocean on the meandering footbridge for a spot of 'surf fishing'.

Check 'Urunga Radio Convention' web page - <http://www4.tpgi.com.au/goldy2/>

(Urunga Info on Web, Links page, 'where the rivers meet the sea')

**Ken Gold VK2DGT**  
for the Urunga Radio Convention 2009.



their daughter Ingrid VK3FGRL and son Michael VK3FMIC; also in the multi operator team was Nick VK3NJP. They travelled to Mt Leura, overlooking Camperdown, in QF11nS. It was their first time out together on a field day and they entered the 8 hour Multi-Op section operating under the call sign of VK3ALB. They were active on 2 m, 70 cm, 23 cm and 3 cm. In all they completed a total of 95 contacts and compiled a score, subject to confirmation, of over 2,000 points. A great time was had by all especially the girls who exhibited, according to Lou, a very competitive spirit as operators and they are already planning improvements for the next field day.

#### Team 4: VK3ATL

This multi operator team comprised Dallas VK3DJ, Tony VK3JGC and Gary VK3FWGR and the bands covered were 6 m, 2 m and 70 cm. operating from Mount Bellarine, locator QF21hu.

Some 34 contacts were made in the 8 hour window. The positioning on the bend of the road attracted a lot of attention from locals driving past as to what exactly they were doing

#### Team 5: VK3HQ

This team comprised Gerhard VK3HQ and his 12 year old son Daniel filling in the log. They were operating from Mount Tara northeast of Bairnsdale in QF42ck. The two bands used were 2 m and 70 cm SSB with "hand held" beam antennas. Whilst only a small number of contacts was made they included club members VK3ALB and VK3UHF.

#### Squid Pole in the field - VK3DJ/p2

Post Christmas, Dallas VK3DJ took a solo trip out to NSW operating en route on 7.085 MHz using a home made whip antenna and had mobile contacts all the way from Geelong into NSW. Several days were spent operating /p2 on 6 m, 2 m and 70 cm from Tomaree National Park, on the headland, and also Fingal Bay on the north coast of NSW. On the 6 m band Dallas had SSB contacts with VK1, VK2, VK3, VK4, VK5, VK7 as well as ZL1, ZL2, ZL3 and ZL4.

Dalmieny on the south coast of NSW

The picture at right shows the Squid Pole used by Dallas, as featured in the February 2008 AR magazine. It is of interest to note that the AR magazine article caused a huge demand for this type of antenna pole.



Left to Right VK3ALB, VK3FGRL, VK3FMIC and VK3NJP



The four vehicle cluster of VK3ATL on Mount Bellarine overlooking the bay



## VK6

Keith Bainbridge VK6XH

As I write this in early February I have to wonder, given the high temperatures the country is suffering at present, if a few more sunspots might help bring the temperature down! It would certainly make a few more amateurs more inclined to spend time in hot shocks at the bottom of the garden. Back to local matters.

From the Hills Amateur Radio Group, a report by Martin VK6ZMS:

*The Hills Amateur Radio Group received an early Christmas present when Ian Garnett VK6LCT kindly donated a FT-1000MP MKV Field and a 40 metre Bobtail Curtain antenna. It was un-boxed and on air in record time. The club's call sign VK6AHR could be heard working Europe late into the evening.*

*The transceiver will also get a good work out in this year's CQ World-Wide WPX Contest as the group intends to compete. Members have also been busy upgrading the station. A TET-4 element tri-band Yagi has been refurbished and is ready to be installed, and this antenna will be rotated by a recently purchased Yaesu G-1000DXA. A new G5RV was installed last year.*

*HARG will be holding a swap meet on 14 March at their clubrooms on the corner of Sanderson and Brady Roads, Lesmurdie. Doors open at 1 pm for sellers and 2 pm for buyers. This is a great opportunity to offload excess spare parts or to find that rare component you have been searching for. A sausage sizzle and raffle will also be held. The entry fee for buyers is \$2 and for sellers \$5.*

*The HARG Morse tutor, on 3.686 MHz, is back on air after addition of a fan, it has been suffering from the heat! We apologise for any inconvenience its absence may have caused. Reception reports are most welcome to hargsec@iinet.net.au.*

Not every club is lucky enough to have such a radio donated, well done guys, good luck in the contest.

This past week I received a first report from WA ladies, thanks Poppy VK6YF.

*The VK6 radio lunch group first met nearly 30 years ago to give YL's, XYL's and others related to amateur radio operators an opportunity to meet and*

*socialise. OMs accompanying a lady are welcome. The lunches are now held at the Bayswater Hotel, Beechboro Road, opposite the Bayswater Railway Station, at 12 noon on the last Wednesday of each month, except December. There is a choice of snacks, buffet or a la carte meals; pensioners receive a discount on buffet meals.*

*Anyone interested in joining please contact Poppy VK6YF on 6278 4339 or Maree Preston XYL of Jim VK6JP on 9364 1779; we would like to meet you.*

*While on the subject of the AR Ladies I would like to wish Christine VK6ZLZ a speedy recovery from her recent surgery. We hope all goes well.*

From the South West an update from Rob VK6JRC, from the Southern Electronics Group:

*Hello to all. On Friday January 2, 2009 Wes VK6WX, Bevan VK6VX and I headed down to Albany and installed the VK6RAL 70 cm repeater at Mt Clarence. The installation went quite smoothly and the repeater is now on air. The existing equipment was rearranged in the rack cabinet, then the KL450 repeater and 70 cm antenna duplexer was fitted in the rack. Also installed was a 2 m / 70 cm duplexer which allows both repeaters to operate off a single dual band co-linear antenna on the Mt Clarence tower. Both the 2 m and 70 cm repeaters have been interfaced so they can be linked via a DTMF command if required.*

*Progress is being made to upgrade the Mt Barker 2 m repeater and this will be linked full time to the Albany 70 cm repeater. The repeater frequency is currently 438.725 MHz (-5.00 MHz offset). Reports of coverage for the new repeater are welcome.*

*Due to QRM issues SEG will be changing the repeater frequency in the near future. LIPDs are a problem for us even in low density areas! The new frequency (subject to WIA and ACMA bureaucracy) should be 439.950 MHz.*

*SEG are also planning a Foundation Licence Course and assessment session around March 2009. More details when they are finalized - on the website: [www.hamradio.org.au](http://www.hamradio.org.au)*

With Bob VK6POP's recent promotion from the Advisory Committee to being a Director of the WIA, we would like to congratulate him on his new position, and to look for a suitable replacement. Several people have shown interest and a new member will be announced shortly. Watch this space.

The VHF Group had an extraordinary general meeting at the home of Fritz VK6UZ on Sunday 25th January. As it was the Australia Day long weekend the usual Monday meeting was abandoned as Wireless Hill is a prime location to watch the fireworks display and access is impossible!

Fritz arranged BBQ facilities and opened his impressive shack/home business premises for the day to members who enjoyed the chance to test out antennas on his 'temporary test range'. Everything from 6 metres to 2.4 GHz was put through its paces. He also assisted members in checking out dubious equipment, and found a few problems; good fun, and lovely cakes from his XYL!

There is little to report from the NCRG this month. Work is still progressing on the club premises, the new Elecraft radios are getting a thrashing and the log books are filling rapidly. Some members have taken to spending the night out there and working 20 and 40 metres and at the rate of hundreds of QSOs a night. Who says the bands are dead! They are keeping the club QSL manager Neil VK6NE extremely busy.

A reminder for all of you, the NCRG Hamfest is on again in August, Sunday the 2nd at the usual location at the Cyril Jackson Recreation Centre, Fisher Street, Ashfield. A 9 am start for visitors. Hopefully we can attract the Eastern States traders again this year after their excellent support last year and the year before. Put it in your diaries now and you will not miss out. Information can always be obtained from me as I am usually involved in some capacity, even if it is only compere for the day!

That is it from sunny WA, good DX and stay safe.



Christopher Comollattie VK4VKR  
email vk4vkr@wia.org.au  
qtc@wia.org.au

## Soggy North Queensland

The Townsville region has been under the weather so to speak, following some ferocious storms which included lightning zaps.

Some of the equipment at the Mt Stuart repeater site has had to be tended to or replaced upon inspection when weather conditions permitted. On Jan 3rd VK4TUB and VK4FP removed some equipment from service after spurious emissions were detected. This gear is not expected to be returned to service until late February.

The VK4RTL 28.270MHz beacon has been off air since 24th December 2008 after a lightning storm. On Saturday January 10, Don VK4MC undertook a site visit and found the beacon power supply was cactus! Don replaced the power supply with a spare he had on hand and restored the beacon to operation.

## Australia Day in Queensland

A hardy band of hams formed an advance party in north Queensland for the Australia Day Long Weekend.

On Friday afternoon they bunkered down for the 100 mm plus rain that fell into the wee small hours of Saturday morning. The rain stopped, more hams and support crew arrived and soon more gear was deployed.

Richard VK4FRJG had a very long wire deployed in a very high tree coupled to his IC-706MKIIG with a MFJ portable tuner and was getting contacts on most of the regional nets.

Col VK4UCM had an even longer wire which he tried, along with his standard auto tuning antenna, to join the daily HF Radio Club nets. Gavin VK4ZZZ deployed a five element Yagi connected

to a FT-8800 and non-interruptible power supply to maintain VHF contact with those travelling to the event and later deployed a two band trapped dipole connected to an IC-706MKIIG for use on 80 and 40metres.

Phil VK4HSV outdid everyone with the radio van - sporting radios and antennas for all bands, colour television, sound reinforcement equipment with DVD playback and enough lighting to support night cricket matches and enough creature comforts for a month.

By late Saturday afternoon the ZT and TLB dampers were distributed for Happy Hour and the group discussed what activities might take place during the rest of the weekend. By Saturday evening it was decided to bring forward some of the Australian activities to Sunday as the weather forecast indicated more torrential rain on Sunday night. A game of ZT's Articulate was played through Saturday evening, with everyone awarding the best caller award to Tony VK4TJS, as his infectious enthusiasm got everyone going!

On Sunday the Australian activities just kept going, damper was cooked, workshops on whip cracking and boomerang throwing were undertaken, along with more radio operating, extra damper making and some serious loafing. After dinner on Sunday Evening and with participation in the North Queensland Net completed, a relaxing evening of Karaoke took place. The launch of the new and fantastic TARC raffle was conducted by Ray VK4NET as well.

A heap more rain fell early Monday morning and put paid to any swimming in the creek on Australia Day; however it did not stop the raising of the Australian Flag with a bang provided by Ray VK4NET's canon (loaded with talcum powder and the bang yelled out for effect).

This report leaves out a heap of stuff that happened and does not do justice to the fun and relaxing time had out in the field mixing Australian activities with Amateur Radio and good company.

Many thanks to everyone who organised, attended, visited and otherwise made the weekend happen.

## RADAR

Rockhampton and District Amateur Radio Club are going Art and Craft. On Sunday March 8th RADAR club members will be attending the Rockhampton Heritage Village Art, Craft and Hobbies Day on Boundary Road North Rockhampton. A display of HF, VHF/UHF and APRS will be in operation for the general public to view. Also on display will be WIA leaflets and foundation manuals to welcome possible new members to the WIA and amateur radio in Australia.

Be a part of the great day by dropping by and saying hello or even better if you are on your radio somewhere out there: say hello via IRLP node 6973 to VK4VKR and the group. Our WIA broadcast relayed by Mike VK4LMB is 0900 local time, so give us a little time for our club chat and callbacks around this part of the day. If you have internet access, check out the recently updated web site for more RADAR Club news and events: <http://radarclub.tripod.com/news.htm>

## Redcliffe and Districts Radio Club Inc

Redcliffe and Districts has another fine copy of QRM with a very detailed layout of their radio operations

Contact David Close VK4DC [president@redclifferradioclub.org.au](mailto:president@redclifferradioclub.org.au) for details on obtaining your free emailed copy on a regular basis

continued next page

## Silent Keys

### Sjoerd Jongens (Sojo) – VK7ASJ - Formerly VK7ZSJ/VK0SJ/ZL5BA

It is with great sadness we inform readers of the very sad news that Sjoerd "Sojo" Jongens died on Thursday 13th November in hospital in Amsterdam, surrounded by his family.

He did not regain consciousness after a push bike accident. He was a good mate, a tireless worker and a superb engineer, that "flying Dutchman". Sojo was very involved in the 1983 Heard Island DXpedition. Sojo joined Greenpeace in 1987, when he took on the job of radio operator at World Park Base in Antarctica. He was a veteran of two winters in Antarctica with the Australian Antarctic Division (Mawson '80 and Maca '86) before he joined Greenpeace at World Park Base. Sjoerd was all geek. His single-minded obsession with all things digital meant that he was constantly finding new ways to bend new technologies to Greenpeace's purposes, and he broke new ground for two decades. He was possibly the grumpiest



Sojo running a ham sked on the inland route to Scullin Monolith by dog, Spring 1980.

support person in the history of IT support. And yet beloved by everyone who caught a glimpse of the heart behind the gruffness.

Valé Sjoerd.

Tom Maggs AAD, Alan VK7KAJ, Harvey VK7HK and Greenpeace International

### Doug Newton VK3DN

Doug was born on 5 June 1922, and passed away on 29 July 2008, aged 86.

Doug became interested in amateur radio while growing up in Castlemaine, and was licensed in 1939 at the age of 17, with the call sign VK3DN.

Doug saw war service between 1941 and 1946, as a Wireless Operator/Flight Sergeant.

After the war he joined the PMG as a supervising technical officer, eventually retiring after 35 years of service.

I first met Doug when he moved to live near me in 1985. This was the start of a long friendship. Doug was a great mentor and teacher. He made many friends on the air over the years, both

local and DX, on CW and phone. He was always helpful with his knowledge and a gentleman on air to anyone who worked him.

Doug is survived by his wife of 60 years Dallas, and sons Gary VK3DGE and Lee.

Submitted by Ray Dean VK3RD

*VK4 continued*

### SCARG

The Sunshine Coast Amateur Radio Group consists of about 51 mature and experienced amateurs. Meetings are held on the first Saturday Quarterly at 51 Castlehill Drive, Nerang at 1400 local.

The venue is adequate, having its own packet setup, telephone, fax and database, listing the group and some 250 local amateurs. Refreshments are laid on with a pleasant outdoor setting if weather permits. The group has its own repeater, VK4RBT, on 147.800 MHz (with minus offset) and the group's call sign is VK4WIF. A daily check-in takes

place at 0900, and members are invited to call in.

The annual membership fee is \$15.00 to cover the expenses of the monthly newsletter that is posted to all members. A board of five members, including a Secretary and Treasurer, guided by a Constitution, administers the Group. The emphasis is on friendliness between members; a liaison HF net held on 3.605 MHz Thursdays at 1930. Join in and be welcomed to this friendly group. For information on any matter please contact the Secretary, Ken Ayers VK4KD jessy8@optusnet.com.au

### WICEN

WICEN Queensland holds a net every Sunday on 7075 kHz from 0830 (2230 UTC). The net calls in regular stations and then invites new stations to call in. If conditions are poor on 7 MHz, net control then moves to 3600 kHz.

Mix it with other WICEN ops and call in on the net!!

Until next time, 73  
VK4VKR (IRLP 6973)  
On the side and listening

## Time to renew your subs - plus

With the next newsletter there should be a subscription renewal. So this is the time to consider finding an overseas amateur to sponsor. It is very interesting to have a contact with a YL in another country and it is a great way to make new friends and the cost is quite low.

Maria VK5BMT is our Sponsorship Secretary: she can be found through the information in the newsletter or QTHR the callbook. She should be able to find you a sponsor in another country. All the Sponsorship Secretaries keep in touch.

Usually you will get a reciprocal sponsorship for your new friend's country so you will receive their newsletters, just as they will now receive yours. If you sponsor someone in a country with a different language you may have to seek help but there are a number of translation programs available through the internet to help. It is fun even when you have to sit down with a two-language dictionary - a challenge.

If you should travel to your sponsor's country it is marvellous to have someone on the spot to tell you the best places to visit, to know when places are open or closed and probably to take you to some of those places.

## The John Moyle Memorial Field Day

This weekend contest is on in the middle of March. While many clubs go to particular locations, every Australian amateur can participate from their home station.

All the competition details were in *Amateur Radio* in the February edition (p 47) and there will be lots of activity on all the bands. You can operate just for a six hour period or you can work through the 24 hours. Because the Contest is arranged in blocks, you can even get some sleep!!

Repeat contacts can be made in each three hour block, so you can accumulate a high score. Operating on VHF and UHF gives you multipliers for distance,

so you need to read the rules carefully.

This contest is held in recognition of the contribution John Moyle (a past editor of AR) made to Australian amateur radio. Without John we might have lost our allocation of band space on 20 metres.

Compared with the rest of the world, Australia has a very small population so our voice at an international level is very small.

We had a very vocal advocate in John Moyle when we really needed it.

John was very keen on amateurs being able to operate under emergency conditions, using batteries or a generator, which is why this contest is a Field Day Contest.

If you or your club participate, please let me and/or Dot VK2DB know about it and send us pictures. That way we can tell others what you are doing.

Please read your Newsletters. Dot lists all the forthcoming contests. If you participate in the contests, please tell me or Dot how you went, and how you enjoyed it. This will encourage others to "have a go", too.

## Did you use the AX prefix on Australia Day?

As radio amateurs, on special occasions we are allowed to use AX instead of VK before our call sign. It is fun to do and it recognises that the day is special.

Thanks to Shirley VK5JSH all of us on the Monday night net on the 26th January did use it. We stumbled a bit at the unfamiliarity but we waved the flag.

It was Leslie VK5HLS's intention to use the prefix on the other HF bands later in the night but we have not been told how well she did.

Next time we have a special day, maybe Anzac Day, why not try it on your friends to see if they recognise the significance.

## Regular luncheons

Now that the holidays are over your diary should be filling up with all the regular

meetings and skeds and all the luncheons. It is great to meet again and exchange news or make plans for future events. But, again, please let us know what you are doing with photos if possible.

I know that in VK5 we have a luncheon on the second Tuesday of the month, at the Museum starting at 1200. VK3 has regular lunches on the first Sunday of the month at a different venue each time and irregular ones at other times.

In VK6 the luncheons are on the third Thursday of the month in North Perth.

If you are visiting a different state, always get in touch with the State Rep to see if there is a regular lunch or if a special one can be arranged. We like to meet each other face to face as well as on the air.

**"Hey, Old Timer..."**

**If you have been licensed for more than 25 years you are invited to join the**

**Radio Amateurs Old Timers Club Australia**



or if you have been licensed for less than 25 but more than ten years, you are invited to become an Associate Member of the RAOTC

In either case a \$5.00 joining fee plus \$8.00 for one year or \$15.00 for two years gets you two interesting OTN Journals a year plus good fellowship.

Write to  
RAOTC,  
PO Box 107  
Mentone VIC 3194  
or call Derek VK3XY on 03 9563 6909 or  
Bill VK3BR on 03 9584 9512,  
or email to raotc@raotc.org.au  
for an application form

# Contests

Phil Smeaton VK4BAA

## Contest Calendar for March to May 2009

Mar	7/8	ARRL International DX Contest	SSB
	14/15	RSGB Commonwealth Contest	CW
	14/15	John Moyle Memorial National Field Day	CW/SSB/FM
	21/23	BARTG RTTY Contest	RTTY
	28/29	CQWW WPX Contest	SSB
April	4/5	SP DX Contest	CW/SSB
	4	QRP Hours Contest	CW/SSB
	4/5	EA WW RTTY Contest	RTTY
	11/12	Japan International DX Contest	CW
	11/12	Yuri Gagarin International Contest	CW
	18	Holy land DX Contest	CW/SSB
	18	TARA Skirmish Digital Prefix Contest	PSK
	18	Harry Angel Memorial Sprint	CW/SSB
	18/19	YU DX Contest	CW/SSB
	25/26	Helvetia Contest	CW/SSB
May	25/26	SP DX RTTY Contest	RTTY
	9/10	CQ-M International DX Contest	CW/SSB
	9	VK/Trans-Tasman 80 metres Phone Contest	SSB
	30/31	CQWW WPX Contest	CW

## Commonwealth Contest

Beru, otherwise known as the Commonwealth Contest, will be taking place on 14th and 15th March 2009. As run previously in 2007 and 2008, it is proposed again to organise a Commonwealth Team Contest, to run in parallel with the normal Commonwealth Contest.

Steve VK6VZ is the Australian team organiser and Steve advises that the team competition rules limit team headcount to ten operators. The 2009 squad below was chosen by looking at the top 13 Australian scores in the Commonwealth Contest 2008 and first offering these operators the chance to be in the team for this year. These would make up the team of 10, plus three reserves. If any of these 13 could not take part this year (or did not wish to) then their place was

to be offered to the competitor with the next highest score. This seems the fairest way of choosing a team - and encourages those who would like to be part of the team for 2010 to put in the best possible score for 2009. Eddie VK4AN has recently moved house and does not have an antenna system as yet, so the team has changed a wee bit to accommodate accordingly.

The team for 2009 at the time of going to print consists of:

1. Barry VK2BJ
2. John VK4EMM
3. Kevin VK6LW
4. Steve VK6VZ
5. Alan VK6BN
6. Mike VK6HD
7. Martin VK7GN
8. David VK2NU
9. Les VK4BUI
10. Russ VK4XA

## Reserves

1. Karl VK2KM
2. George VK4XY

The contest requires a slightly different approach to antennas and bonus/multiplier planning and it makes an interesting difference to be competing as part of a geographically widespread team. Why not have a go in the contest and try for a team slot for yourself.....? With the team consisting of such salubrious individuals, qualifying is likely to be hotly contested once again. Give them a call - they will be glad of the points!

## CQWW WPX SSB 2008 Results

The results were issued recently - it is always good to see VK stations putting VK on the world stage.

Congratulations everyone!

Call	Category	Score	SSOs	Operators
VK1MJ	SO HP ALL	19,803	77	
VK2APG	SO HP ALL	1,890,910	1,482	
VK2ATZ	M2	2,794,902	1,533	VK2KRM VK2NU VK2AEA VK2OJ VK2RD VK2FHRK VK2FMDB VK2BPL VK2KEG
VK2BCQ	SO HP ALL	99,814	255	
VK2CA	SO HP ALL	461,829	631	
VK2CCC	SO QRP 20 m	4	2	
VK2FHN	SO HP ALL	53,212	187	
VK2GR	SO HP ALL	2,324	34	
VK2KDP	SA LP ALL	39,346	148	
VK2XN	SO HP ALL	1,013,274	963	
VK3FM	SO HP ALL	93,155	201	
VK3TDX	SO LP ALL	4,040	47	
VK3YXC	SO HP ALL	17,877	100	
VK4AMC	SO LP ALL	41,921	153	
VK4ATH	SO QRP ALL	28,116	118	
VK4BAA	SO LP 40 m	186,093	257	
VK4FJ	SO LP ALL	80,640	234	
VK4FRAJ	SO LP ALL	114,708	309	
VK4HAM	SO LP 20 m	304,965	474	
VK4VDX	SO LP ALL	10,602	73	
VK4VSP	MS	14,416	88	VK4VSP VK4VCC
VK4WIL	M2	668,168	775	VK4SN VK4ZD VK4KYL
VK4XES	SO LP ALL	1,809	27	
VK6AHR	MS	4,680	50	VK6ACA VK6ZMS VK6FDX VK6POP
VK6FAU	MS	772,455	805	VK6FAU VK6NU VK6JX VK6EH VK6YEL VK6APK VK6HRC VK6TT (the VK6ANC team on a junket!)
VK6FDX	SO LP ALL	8,580	69	
VK7GN	SO HP ALL	1,220,865	948	
VK7WPX	SO HP ALL	198,162	359	
VK8AA	SO HP 10 m	66,462	215	

## QRP Hours Contest

Mike Dower VK2IG Contest Manager

**Saturday, 4th April, 2009**

1000-1059 UTC – CW/RTTY/PSK31

1100-1159 UTC – SSB

**NOTE: SUMMER TIME STILL  
OPERATIONAL ON THIS DATE**

Sponsored by the CW Operators' QRP Club, the AIM of this contest is to make as many contacts as possible within a one-hour period using your choice of mode. Whilst it is hoped that the event will be strongly supported by QRP Club Members, it is open to all licensed amateurs.

### Output Power:

Preferably 5 watts, but not more than 10 watts of carrier power. This is to stress the QRP nature of the event.

### Modes:

**First Hour – CW/PSK31/RTTY**  
(2100-2159 Eastern Daylight Saving Time)

**Second Hour – SSB** (2200-2259 Eastern Daylight Saving Time)

### Frequencies:

CW 3.500-3.535 MHz

PSK31/RTTY 3.620-3.630 MHz

SSB 3.550-3.590 MHz

Exchange a three-digit serial number starting at 001 and incrementing by one for each new contact.

Score one point per contact.

Logs must show the name, address and callsign of the operator and the number of points claimed.

Send Logs by mail to: Mike Dower VK2IG, PO Box 8013, Gundaroo, NSW, 2620 or by email to: [qrphours@exemail.com.au](mailto:qrphours@exemail.com.au) Please consider using email and sending the log immediately after the event. Otherwise logs should be received by Friday, 17th April, 2009.

Certificates will be awarded to the highest scorers in each Mode in each State or Territory.

Note: Email is the preferred method of sending the log, but all entrants must include their postal address (you cannot know if you will be a section winner!!).

## Results for the QRP HOURS 2008 Contest

CW			
1st	VK2ENG/QRP	Mike	20 points
=2nd	VK4ZW	Ray	12
	VK4TGL	Gerard	12
4th	VK3TX	Deane	8
5th	VK4JAZ	Grant	4
6th	VK3JS	Ian	2

SSB			
1st	VK4ATH	Tom	16 points
=2nd	VK7VH	Vince	13
	VK2ENG/QRP	Mike	13
4th	VK2ASU	John	12
5th	VK2MTW	Terry	11
6th	VK4AMC/QRP	AJ	9
7th	VK2CJC	Jack	7
8th	VK7XGW	Wayne	4
9th	VK6FBVB	Brian	1

### SPECIAL EVENT GippsTech & WIA AGM

see page 53

## Harry Angel Memorial Sprint

Ian Godsil VK3JS Contest Manager

### 1000 Z – 1146 Z Saturday 18th April, 2009

This an annual Contest to remember VK's oldest licensed operator, Harry Angel. Please note the time length of the Contest, 106 minutes, Harry's age when he died in 1998. It is open to all HF operators.

Object is to make as many contacts as possible on band 80 metres, using Modes CW and SSB.

**Categories:** Single Operator; Multi-Operators.

**Sections:** CW, Phone, Mixed and SWL (please choose ONE ONLY).

**Frequencies:** CW: 3500 - 3535 kHz, Phone: 3560 - 3595 kHz.

Exchange RS(T) and serial number starting at 001.

Score two points per CW QSO and one point per Phone QSO.

Stations may be worked once only per mode. Logs must show time UTC, callsign worked (both callsigns for SWLs), mode, RS(T), serial numbers sent and received for

each QSO

**Sending Logs:** email is the preferred method to vk3js@zoho.com (Please note that even for email logs, the entrant's name, callsign and postal address are required, as per the Summary Sheet.)

Send written Logs to

Harry Angel Sprint,  
121 Railway Parade, Seaford 3198,  
by Friday, 1st May, 2009.

Send summary sheet showing name and date of Contest, name, address and callsign of entrant, category entered, points claimed and a declaration that the rules and spirit of the Contest were observed.

**Note:** Please submit your logs as soon as possible after the Contest and do not forget to include your postal address (you cannot know if you may be a section winner!).

If SSB frequencies are very busy, please go above 3600 kHz, but stay below 3620 kHz.

## Results Harry Angel Sprint 2008

From Ian Godsil VK3JS Contest Manager

SSB			
1st	VK2AEA	Vlad	83 points
2nd	VK7VH	Vince	68
3rd	VK3SSB	Ash	67
4th	VK4ZD	Bill	66
5th	VK4FDKR	Cory	65
=6th	VK2BV	Waverley ARS	64
	VK4VDX	Roland	64
8th	VK2KDP	Craig	60
9th	VK4VCH	Catherine	53
10th	VK5MRW	Robert	49
11th	VK4ACB	Wade	45
=12th	VK2FREK	Richard	39
	VK3SAY	Philip VK3JUN1 & Andrew	39
	VK3FAFG	Peter	39
15th	VK4DGG	Mark	38
16th	VK4FJ	Warren	36
17th	VK8AV	Alan	35
18th	VK4TGV	Peter	34
=19th	VK4DGS	Dave	33
	VK4UD	Robert	33
21st	VK4ION	Gail	32
22nd	VK2ZCM	Craig	31

=23rd	VK4TAA	Peter	30
	VK4JRO	Ross	30
25th	VK4FSOS	Saun	27
=28th	VK4CAB	Anskle	23
	VK4ATH	Tom	23
	VK3LCD	Gary	23
29th	VK7JGD	Garry	22
30th	VK3PRA	RUBEN	21
31st	VK2HBG	GERALD	15
32nd	VK2JHN	WAL	11

CW			
1st	VK3KE	Jim	10 points
2nd	VK3TX	Deane	8
3rd	VK3JS	Ian	2

MIXED			
1st	VK2AYD	David	76 points
2nd	VK4DX	Mike	75
3rd	VK2END/ QRP	Mike	41
4th	VK2CTN	Chris	18

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# DX - News & Views

John BazleyVK4OQ,

P O Box 7665,

Toowoomba Mail Centre, QLD 4352

Email john.bazley@bigpond.com

Well the first, of what could be several really wanted Countries activated – Desecheo. The following Press Release # 4 - dated January 26th, 2009 brings us up to date.

*We have reserved the special call sign K5D for our upcoming Desecheo operation. The operation will begin late in the day on 12th February.*

*Because Desecheo is so very rare (#6 worldwide, #3 in Europe and #2 in Asia) there are many, many hams worldwide that need KP5 for an all-time new one. Therefore, we are asking that you not contact the DXpedition on any band/mode that you have confirmed from a previous DXpedition. This will allow the people who really need a new DXCC entity a better opportunity to get through the pileups.*

*Our objective is not to establish a world record for contacts... there will be no "greenies", no boxes to check, no competitions for most band/mode QSOs, no certificate or awards for contacting the DXpedition more times than anyone else. So, if you have KP5 already confirmed on a particular band/mode, we respectfully ask that you exercise restraint. If, late in the DXpedition, we are calling CQ for contacts, we will welcome your call.*

*The team has encountered higher expenses than anticipated. These mainly involve the transportation and feeding of other personnel that will be travelling to the island with us. Approximately ten other personnel will share our campsite and facilities for the duration of the DXpedition. They will be on Island with us to provide security and carry out field research. Therefore, we ask that you consider a contribution to the DXpedition to help with these incremental expenses. Just go to (<http://www.kp5.us/>) and click the button that reads "How you can Help".*

*Nine New Zealanders will put Chatham Island, ZL7, on the air March 6-11. Included are ZL2AL, ZL2AAA, ZL2LE, ZL1BYZ, ZL2CC, ZL2RVW, ZL3AB, ZL2WG and ZL1ALZ. Duncan,*

*ZL3JT will act as pilot station back home in Christchurch ([zl3jt@paradise.net.nz](mailto:zl3jt@paradise.net.nz)) The team will stay at the Chatham Fishing Lodge in the Kaiangaroa fishing village at the northeast tip of the Chatham Islands: [www.chathamfishingexperience.co.nz/](http://www.chathamfishingexperience.co.nz/)*

**VK9LA Lord Howe DXpedition -** March 23rd to April 3rd 2009. It was good to receive the following update from VK4FW.

*By the time you are all reading this article all of the equipment will have arrived on the island by boat from the mainland. The sixteen operators will keep seven complete HF stations and one on six metres operational daily as we endeavour to give the deserving a new one. Lord Howe Island has a ranking on the world wide wanted list of 63, and as high as 28 throughout most parts of Europe. The [www.odxg.org/vk9la.htm](http://www.odxg.org/vk9la.htm) web site will have all the latest news releases on it as well as a complete operating schedule prior to departure.*

*QSLing chores will be handled by VK4FW. We are trying to perfect an online system for this DXpedition which will enable a much faster QSL turnaround.*

*I2ZESV is replacing VU3RSB who was forced to withdraw. Tony will acquit himself well as he has vast experience operating from the IR4M contest station.*

*Please note that a special time has been set aside to work the VKs and larger Pacific region on 80 m. Full details are on the web site.*

**Dave G3TBK** will shortly resume operations from the Caribbean Island of Saint Vincent, again using the callsign J88DR. Operation commenced in the late evening of Sunday January 18th and will continue until mid- March. Activity will be on CW, SSB, RTTY and SSTV, using all HF bands. QSL via G3TBK, either using the Bureau or direct – but note no further cards will be answered until mid-March. All cards received for previous operations by J88DR have now been answered.

**Jim K9PPY** says he is planning to head to Fernando de Noronha, PY0F, in March. We are still waiting for more details.

Word has it that **Lars Boehme DL9LB/MM0DWF** is heading back down to South Georgia and should be QRV as VP8DIF next month.

**AP2AHSF** is **Axel DL7UPN** operating from Islamabad, Pakistan. The four letter suffix was issued by Pakistan Telecom Authority (PTA) on Friday January 16th. He works in Pakistan for one or two weeks at a time and hopes to be QRV in his spare time from his office in the capital city.

**OH6CS** is going to the Canary Islands, where he will be QRV as EA8/OH6CS in the CQ WPX SSB Contest on March 28 and 29. This will be a single-op 15 metre only entry. QSL via LOTW.

**5X1NH** will be back on the air March 11th "for a couple months" volunteer work in Fort Portal, as Nick G3RWF goes back to Uganda. This is in the west near the Congo border. Nick says he will arrive in time for BERU. From previous operations, Nick has 20,000 QSOs in the log and may do some digital modes this time, though he says he is not very good at it. And he will try to make improvements to his low band antennas. QSL via G3RWF.

QSL manager **Dianna KB6NAN** is closing the log for the following N4BQW operations: VP5/N4BQW, January, 2005 - the log is on LoTW; KH9/N4BQW, October/November, 2002 and January and June of 2003 - paper logs. Dianna will keep the logs open for one more month to give you a last chance to get a card. SASE please. Chuck Brady N4BQW became a silent key in July 2006.

**Seth SM0XBI** is active again as J79XBI from Dominica (NA-101) from 17th January until around 1st April. He will operate SSB only. QSL via home call, bureau preferred.

**Gerd DJ4KW V31YN** and **Gisela DK9GG V31GW** are active from Belize from 19 January to early March,

including a number of contests. From 26th February to 3rd March look for V31YN/p who will be active from NA-180. QSLs via home calls (direct or bureau), or LoTW.

Vlad RA4LW says he is the new QSL manager for ER4DX and ER0WW. QSL direct only to Vladimir V. Ryabov, P.O. Box 2, Dimitrovgrad, 433508, Russia.

SV9/DJ7RJ, Willi Przygode, will be on from Crete starting February 24th and continuing for three weeks. He plans to be on CW and SSB. QSL to his home call.

OM2DX is now working for the Embassy of the Slovak Republic in Hanoi, Vietnam for the next three years. On 5th January he got his licence, and he will operate as XV9DX and 3W1M on all bands CW, SSB and digital modes. QSL via OM3JW.

Bernhard DL2GAC is in Honiara, Solomon Islands, and expected to stay until 28th April, with a side trip to Temotu Province in March (see H40 below). Bernhard plans to operate SSB as H44MS with a focus on 80 and 40 metres. QSL via home call, direct or bureau.

Sigi/DK9FN (CW operator) and Hermann/DL2NUD (EME operator) will join Bernhard DL2GAC (H44MS) in late February for a 2-3 week operation from Temotu Province. Their flight to Lata is planned for 2 March, and Sigi will go back home on 16 March. He plans to operate CW only on 160-6 metres, hopefully as H40FN (the call sign he used back in 1999). Whatever call sign Sigi will be using, the QSL route is via HA8FW (bureau preferred).

Bernd VK2IA will be active from Cocos (Keeling) as VK9AA from 14 to 27 March 2009 using 160 to 10 m, CW and SSB QSL via DL8YR.

Good luck in the pile-ups.

Special thanks to the authors of *The Daily DX* (W3UR), 425 *DX News* (11JQJ) and *QRZ.DX* for information appearing in this month's *DX News & Views*. For interested readers you can obtain from W3UR a free two week trial of *The Daily DX* from [www.dailydx.com/trial.htm](http://www.dailydx.com/trial.htm)

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## Spotlight on SWLing

Robin Harwood VK7RH

### The Age of Obama dawns on the SW World

January saw quite a great deal of activity on HF despite abysmal propagation. As mentioned in last month's column, Israel's patience evaporated and they launched a bloody incursion in the Gaza Strip, just weeks before the onset of a new American administration, led by the first Afro-American president, Barack H. Obama. Neither the Israelis nor the Hamas faction were in any mood to compromise and the fighting went on. Over 1500 were killed and thousands were wounded and hundreds of buildings were flattened to rubble.

The Israelis destroyed the Al Aqsa radio and TV building and senders but apparently a mobile studio managed to uplink audio and video via satellite to the outside world. Audio was observed on 5835 and 5875 in Arabic around 1900 with the call of "Al Aqsa". The senders were believed to be from one of the Gulf countries and was a relay into the Middle East. The fighting subsided just a few days before the Presidential inauguration but tension still remains.

The inauguration of Barack Obama naturally was the focus of the World's media and it was extensively covered on shortwave. The ceremony was broadcast live in many languages or dialects but the various satellite delays or audio feeds made for very odd effects, especially where two stations were on the same or adjacent channel. I gave up and watched it all on TV.

It did not take long for the new administration to change things. Ever since 9/11, a clandestine signal targeting Afghanistan has been noted via various European and American sites. The station used the call sign of Radio Solh but programming never varied with music and announcements at identical times. It is highly dubious that anybody bothered listening to the same music and announcements over the 7 year period. Anyway Radio Solh went silent within 40 hours of Obama taking office.

I also mentioned last month that Americans were going to close their analogue TV signals as of the 17th of February. The Obama administration quickly brought in legislation in Congress to extend this to June because it was estimated up to 6 million people had not made the transition to digital, despite coupons and other incentives. Most of these were in the lower income bracket.

As you may be aware, March 29th sees the implementation of the A-09 broadcasting period at 0100. This coincides with the introduction of Daylight Saving in Europe and the former Soviet Union. Expect quite a raft of changes especially between 7100 and 7200 because as from that date, broadcasters are supposed to vacate this band, allowing hams to use it freely. The section between 7300 and 7500 is now reserved for broadcasting. But there are a few broadcasting stations who may be reluctant to move, because their governments are not members of the ITU. This includes North Korea on 7100 and 7140 and Taiwan on 7130. Also there are several clandestine stations in Africa targeting Somalia, Eritrea and Ethiopia around 7100. It is going to be very interesting to listen on this piece of spectrum.

As part of this move, Canadian Time Station, CHU in Toronto was forced to move from 7335 to 7850 on January 1. For many years broadcasters have impinged on CHU and the last straw was when the Americans absolutely refused to shift WEWN and WWCW off 7735 despite Canadian protests. CHU can be heard on 7850 but signals are poor here compared to 7335. CHU is also heard on 3330 and 14675.

Well that is all for this month. Do not forget you can email me at [vk7rh@wia.org.au](mailto:vk7rh@wia.org.au)

ar

## Predictions on the go

As many of you know, for the most part, I normally operate the FM birds in the QRP/portable mode. While this is not every amateur satellite operator's cup of tea, it can be very rewarding particularly when you are travelling.

When discussing this topic with others, one particular question comes up over and over again. How do you run your pass predictions while you are on the road? Knowing when a pass is to begin and where the bird will be in the sky while working away from home is the subject of this month's column, with a look at two mobile satellite tracking applications.

## Low tech or hi tech?

Quite often, many people overlook the low-tech solutions in favour of the flashy, battery-hungry methods offered by modern gadgetry. Before going on to outline the hi-tech options, it is worth thinking about good old paper and ink.

On many occasions when I am planning to work the birds while I am bushwalking, during a drive in the countryside, or taking an extended break from home, my initial inclination is to take everything with me but the kitchen sink – HTs, chargers, extra battery backup, multiple antennas, a

240 V inverter, solar panels, a laptop, a PDA, AR and so on. Just as often I have to force myself to stop to consider the reasons for going on the trip in the first place and the feelings of my travelling companions who have to endure a car full of my radio gear and electronics!

Okay, I have to admit, quite often I do end up taking all that kind of gear with me when I am going away for a few days or more. But sometimes, I will just grab my HT, the Arrow antenna and run-off a three line detailed printout from my prediction software. It is not quite the same as seeing a ground track and a satellite footprint in simulated motion

## AMSAT-Australia

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**Website:** [www.amsat-vk.org](http://www.amsat-vk.org) **Group site:** [group.amsat-vk.org](http://group.amsat-vk.org)

## About AMSAT-Australia

AMSAT-Australia is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-Australia uses the Yahoo group AMSAT-VK as the primary point of contact for those interested in becoming involved in amateur radio satellite operations.

If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

## AMSAT-Australia monthly nets

### Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time,

that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links

### In New South Wales

VK2RMP Maddens Plains repeater on 146.850 MHz

VK2RIS Saddleback repeater on 146.975 MHz

VK2RBT Mt Boyne Repeater on 146.675 MHz

### In Victoria

VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

### In the Northern Territory

VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink

on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

## AMSAT-Australia HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See [www.amsat-vk.org](http://www.amsat-vk.org) for details

## Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the 'FM' repeaters in the sky with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

across a computer screen, but it does the job in the end.

If you have any sense of direction or a compass, with a little practice, it is not all that difficult to work out the path of a satellite from a set of printed predictions. Who knows, if you do not take all that stuff along, you may end up spending a bit more quality time with family and friends, rather than worrying about why the solar cells are not efficiently charging the Gel Cells and so on.

## The hi-tech way

If you do end up deciding to pack the shack into the back of your vehicle, a laptop or notebook computer preloaded with up-to-date KEPS should be at the top of your list. It is also a very good idea to check that you have the correct time set on your computer before you head off. It is not critical, but I like to synchronise my notebooks clock with "time.nist.gov" over the internet. In Windows XP/Vista/W7 you can do this from the date/time icon in the control

panel and then switching to the "internet time" section of this dialog box.

If you are really keen and need your predictions to be accurate to the second, you might like to pack your GPS so that you can enter your exact latitude and longitude into your prediction package when you arrive at your destination.

There is another option, what I am calling "the middle way". No, I am not going all Zen on you, but rather suggesting an alternative, that is, to use your mobile phone to run your predictions. This is an option which is bound to be favoured by the XYL.

## The middle way

Today, when we are talking about a mobile phone, what we are really discussing is a computer which has mobile telephony and a myriad of other fancy options built-in. If you are into technology, your phone probably includes a built-in camera, mp3 player, internet connectivity and a GPS receiver. This hardware is more than capable of

running satellite predictions given the right software

I am going to briefly review two packages which run on a stock standard Apple iPhone 3G. No modifications or "Jail-Breaking" is required to run these programs. I have chosen to look at the iPhone because it has a very large following in Australia and by the time you read this will have more than one satellite tracking application available. These apps will also run on Apple's iPod Touch - a media player, PDA and internet device.

The iPhone will serve well to illustrate what is possible if you choose to use a mobile phone for satellite predictions. I have listed some alternative programs which will work with other mobile telephone handsets at the bottom of this article.

## GoSatWatch

At present the most capable of the satellite tracking 'apps' for the iPhone and iPod Touch is called GoSatWatch.

This program, available via the Apple 'Apps Store' for \$A12.99, was originally developed to assist visual satellite spotters. Since the program's launch, the author has acknowledged that more amateur satellite operators have shown interest than have his target audience. To cater for the wants and needs of these operators, the author has begun to roll-out features specifically aimed at amateur radio hobbyists.

Since the program's first release, I have been in contact with the author to offer some suggestions and corrections. It is very nice to find a software publisher who is prepared to listen to their users and who will make changes to their product in a timely fashion. As this issue goes to press, GoSatWatch is in version 1.2. By now, this may have changed and a newer 'Pro' version may also be available with even more features specifically aimed at hams. I am going to walk-you-through getting this program up and running on your device, reviewing the apps features as we go.

After installing the program on your iPhone, GoSatWatch



GoSatWatch sample screens

or GoSat will prompt you to update the KEPS/TLE files and to set your current 'home' location. Both of these tasks can utilise some of the iPhone's build-in features. If your phone has access to the internet via WiFi or your mobile network, GoSat will automatically download the default TLE files.

Another useful feature, appearing on the 'Edit Location' screen, is the ability to take your current GPS location and to make that your 'home'. This feature is very useful when you are operating away from the shack! You can also select your location from a list or enter your latitude and longitude manually. Note that the iPod touch does not include a built-in GPS. Once you have entered your 'home' location, it is verified on the world map displayed on the bottom of the screen.

After updating your 'home' location, the program will then display a list of the default TLEs. Note that all satellites are selected by default. At this point you can go off and explore the features of GoSat if you must. During my evaluation, my next step was to customise this satellite listing. This is done from the 'Settings' tab by touching the 'Orbital Elements' button. I would suggest that you follow along and do the same before playing.

To make the program less cluttered, remove all of the default TLE files by touching each of the red '-' circles which are shown to the left of the TLE names. If you have been using your iPhone for some time, this method of deleting items from a list will be familiar to you.

Next, add a new TLE called 'Amateur' by supplying a URL pointing to this file, in this case "http://www.celstrak.com/NOROD/elements/amateur.txt". Before completing this step, GoSat gives you the option of testing the URL just in case you have made a typo.

Return to the setting tab by touching the normal 'back' button, touch the preferences button and change the 'Visible Passes' switch to off. When set to the 'on' position, only satellite passes which are visible to the naked eye are predicted. You might also like to move



VK3ANZ's Satellite Tracker sample screens.

the 'Show North Up' switch to the on position, which will make the radar view a bit more intuitive.

Return to the "satellites" tab and then force a TLE update by pressing the circular refresh icon located at the top right of the screen.

You should also choose which birds are 'selected' by touching the Amateur TLE on this screen. This will bring up a list of all the satellites contained in the TLE file. Tap each of the birds you wish to track. It is much easier to manage GoSat if you only track a few birds at a time. You are done, and ready to view amateur satellite passes and predictions.

Most of your time with GoSat will be spent in the 'Map', 'Sky' or 'Passes' tabs. Let us take a brief look at each of these screens in turn.

The 'Map' screen, accessed by touching the 'map' tab, shows a finger scrollable map of the world, with each of the selected birds plotted in real-time. You can select any particular satellite by touching its plotted icon. Once selected, some satellite specific data will be shown at the bottom of the screen. You can also select a particular bird using the arrows at the bottom right and left of the map.

More information about the selected satellite can be viewed from the 'Sky' screen, more on that in a moment.

In addition to the real-time plot, it is also possible to show the positions of the selected birds at any particular time in the future or past, by moving the hands of the clock control. To do this, you touch the clock face displayed at the top of the screen, which in turn displays a larger

clock surrounded by two concentric circles, superimposed over the map view. To change the simulated time, you run your finger around the circumference of either circle - the outer circle controls the 'minute' hand and the inner circle controls the 'hour' hand. Move your finger clockwise to move forward in time, and anticlockwise to move backwards.

Touch the clock face which is located at the top right of the screen once again to return to the real-time plot mode.

The 'Sky' view shows a radar-like view of the sky with the track of the bird plotted across this 'circular view'. Satellite data such as elevation, distance, lat/long, altitude etc. is also displayed on this screen.

The 'passes' screen is where you will run your forward pass predictions. GoSat will predict passes for the current day, the next day or the previous day by touching one of the three buttons at the top of the screen. If you would like to see predictions for future days, just keep touching the ">" button. At present, you are unable to run predictions for days before one previous day.

GoSat will produce a prediction list in a second or so. Once completed, you can then select a particular pass prediction by touching it, and then you can move to either the map or sky views for something a little more meaningful.

In summary, GoSatWatch is a nifty little iPhone app which will do most of the things you might expect from a portable program.

*continued over*

## An Australian Satellite Tracker

At the time I was writing this column, Susan VK3ANZ sent in an email to AMSAT-VK to tell us about her iPhone satellite tracking project. At this time, VK3ANZ's "Satellite Tracker" was just released to selected amateur satellite operators in its first beta version. I have included some very basic information here to promote this local product.

"Satellite Tracker" will be made available free. The program is setup to automatically download all the TLE files from the internet from Celestrak.

The program is quite basic, supplying pass prediction data and a real-time sky view. The interface is clean and uncluttered, which will appeal to those who only need a future pass listing and a set of prediction data.

An interesting feature is the app's ability to show the approximate angle of inclination of the iPhone handset itself. This is achieved using the iPhone's iPod Touch's onboard accelerometers. This

feature has been included to assist in finding a satellite in the sky.

Like GoSat, Satellite Tracker is also able to use the iPhone's built-in GPS to capture the user's home location.

VK3ANZ's package is very well documented with extensive built-in help. While the package was very limited in beta, the app has a lot of promise. The author has intentionally left out a map view to keep the app simple. I do feel that the lack of a map view will limit this package's appeal to some users, as this view can be the most useful when working in the portable mode in areas unfamiliar to operators.

If you are looking for a simple, cheap and straight forward application which generates pass prediction listings with the added bonus of a real-time sky view, this program is for you.

I believe that it is well worth watching this product for future improvements which, at a low price, will appeal to the casual user.

## No iPhone, no problem

Assuming that you own a reasonably up-to-date mobile which supports the installation of additional programs, one of the following applications should work with your handset. If your cell phone only supports Java applets, I would suggest that you should try "SATme" as listed below for Nokia phones.

The following alternative software packages, which will run on various other mobile phone platforms, will have different feature sets from the programs which we have looked at above; however, all the applications listed below will all compile basic satellite predictions.

If you are using a Nokia or other "Symbian S60" based phone, you can try a program called "SATme".

On Windows Mobile based smartphones, take a look at "SatCE".

For Palm based smartphones, search for "PocketSat" or "PocketSat4".

For more information on these programs, visit their websites which can be easily found using Google.

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## Weak Signal

David Smith - VK3HZ

January has been another spectacular month for propagation. We even had some good Es openings on 2 m right up to the end of the month.

On January 8th, another strong Es opening occurred with VK4 and later VK2 working into VK3, VK5 and VK7. On the Tropo front, VK5AKK worked across the Bight to VK6JRC on 2 m.

The evening of the 11th, another Tropo opening across the Bight saw Wally VK6WG working into Adelaide on both 2 m and 70 cm.

On the evening of the 12th, conditions were particularly good between Melbourne and Mt Gambier, with Colin VK5DK working Mike VK3KH at S9+ on 23 cm. Colin was also hearing the 23 cm beacon in Gippsland at S4.

The following day – the 13th – conditions were again good across to ZL with Bob ZL3TY in the thick of things. He worked many VK2s and VK4s and into VK3 as far as central Gippsland. The opening continued into the 14th, although signals were down somewhat.

On the 15th, the VK2 to ZL path was stronger than ever with VK2s working across to ZL1, 2 and 3 on both 2 m and 70 cm. At 2022 Z, Ross VK2DVZ worked Bob ZL3TY on 1296.1 MHz achieving what is believed to be the first VK to ZL South Island contact on 23 cm. Just to prove it was not a fluke, they again worked at 0643 Z.

The 16th produced good Tropo conditions from VK3 to VK5 and VK5 to VK6, although it did not quite stretch across enough at the right time to produce any VK3 to VK6 contacts. Nevertheless, it was looking good for the Summer VHF/UHF Field Day, commencing the next day.

And so it was. There were excellent conditions across the south of the country and many good contacts were had on bands from 50 MHz to 24 GHz. On the evening of the 17th, VK5SR in Mt Gambier was well over S9 into Melbourne on 1296 MHz.

The good conditions continued for Sunday 18th. On one stage during the

morning, I listened on 2 m to VK5SR working station after station around Perth. The conditions unfortunately failed to stretch to Melbourne though, but many stations on the hilltops (and there were many in this region) achieved some excellent contacts. Norm VK7AC on the north coast of Tasmania was also in the thick of the action and at about 2130 Z, he worked Peter VK6KXW – who is about 90 km east of Perth – on 2 m for his first VK6 on that band. Norm also worked VK6ZWZ and Don VK6HK – it was Don's first 2 m VK7 contact after many years of trying. Signals from Peter rose to S8 and so he and Norm QSYed up to 70 cm. At about 2300 Z, they made contact over a distance of 2862.5 km, breaking the VK National 70 cm record.

On the afternoon of the 20th, there was yet another Es opening across to ZL. At 0400 Z, Nick ZL1IU worked across to Norm VK7AC. Then things shifted, and ZL3 was being worked in eastern VK3. At the time, I was talking to Mike VK3KH on the telephone and he mentioned that things were happening, according to the VK Logger. I promptly went to the shack and immediately heard a mini ZL3 dogpile on 144.1. Over the next half hour, I worked 6 ZL3 stations – 5 of them within 20 km of Christchurch. Whether this concentration was due to conditions or just available stations, I do not know. Alan VK3XPD also joined the action. ZL3AAU worked as far across as Garry VK5ZK in Goolwa.

The following evening (21st), in a similar manner, Bob ZL3TY suddenly appeared on 144.1 calling CQ on CW. We managed a quick contact before he disappeared. Bob also worked VK3DUT, VK3ZYC, VK2DVZ and VK2ZT.

The afternoon of the 24th saw another E's opening from VK4 to VK3 and VK5. At the same time, a Tropo opening occurred between VK5 and VK6. The Tropo opening continued for the next few days, with VK7 to VK5 contacts also happening.

Then a high-pressure cell settled over

the Tasman Sea. It produced extreme temperatures in Melbourne (43, 44 and 45 on consecutive days) but also produced excellent Tropo conditions from VK to ZL for several days. ZL1, 2 and 3 were worked by VK2 and VK3. Of note, Nick ZL1IU was a good signal into eastern Victoria, but his signal was attenuated somewhat (read "totally") in Melbourne by Mt Baw Baw, which is directly in the path. Nevertheless, Nick was kept busy and on 2 m, he managed to work Gippsland stations VK3DUT, VK3DMW, VK3VHF, VK3BBB, VK3VFO, VK3ZYC, VK3UCQ, VK3WRE/P (Mt Tassie – also on 70 cm), VK3BQJ and VK3EK, VK3BBB, VK3ALZ and VK3ZQV. Jim VK3II who is further south and would have a clearer shot over the hills also worked Nick. Further west, Nick worked Andrew VK3OE on Mt Dandenong fairly regularly, possibly via knife-edge refraction off Mt Baw Baw into the duct, which was apparently very high – some 3000 m.

Towards the end of the opening, on February 1st, some interesting contacts were made. In Melbourne, Ron VK3AFW was busy compensating for his decades without a ZL on 2 m. He writes: *I became a bit frustrated at only being able to hear a sniff of audio so I asked Andrew VK3OE to ask Nick ZL1IU to listen for someone calling on CW. The result - Nick gave me 559 and I gave him 529. RR and 73s completed a QSO that would not have been possible without much more than 400 W on SSB. I guess it was the heat that made my hands sweaty and my CW even worse than usual. I am too old to get excited about a QSO! We all obviously have to find another challenge for Ron now!*

A little later Mike VK3BDL in the bay-side suburbs of Melbourne, not to be outdone, worked Nick on 2 m. Then, in a very optimistic move, Mike asked Nick to QSY to 70 cm. Just as they QSYed, signals came up on 70 cm and they exchanged 52/53 reports. Then Nick's signal on 70 cm vanished

before any of the other stations hearing him had a chance to work him. It was almost like there was an aircraft giving lift into the duct briefly before flying on. Although the distance of 2579 km fell several hundred kilometres short of the new 70 cm record, it was probably a more difficult contact considering the mountainous terrain at the VK3 end of the path.

Going back to January 30th, starting at about 0030 Z, we had another Es opening between VK4 and VK3 & 5 – very late in the season. The opening lasted for about 1½ hours and was jumping all over the place from Brisbane to FNQ.

Finally, on the morning of January 7th, a Tropo opening formed between VK2 and ZL3, reaching across to Christchurch on the far side of NZ over some very substantial mountains. It began with VK2 stations working Bob ZL3TY on the west coast. Then, at 2014 Z, Steve VK2ZT worked John ZL3AAU in Christchurch. VK2DVZ, VK2IDM and VK2IJM joined the fray, together with ZL3NW and ZL3CU, both also in Christchurch. Ross VK2DVZ worked Bob ZL3TY on 70 cm, supporting the claim that it was a Tropo opening.

As I said at the top, January has been a bumper month for VHF/UHF operators. About the only thing that this season has not yet produced is a VK3 to VK6 Tropo opening – something that normally occurs each year. That is to come, no doubt.

## Spring VHF/UHF Field Day

Alan VK3XPD and Michael VK3KH submitted the following report on their activity during the Spring VHF/UHF Field Day in which they were placed first in the 8-hour Multi-Operator section. My apologies to Alan and Michael that this was not included in the January issue.

Once again, Michael and I decided to team up and tackle the ever-popular 2008 Spring Field Day on Saturday, November 15, 2008.

As usual, the first decision that had to be made was the choice of an operating location(s). The proximity of John's Hill Reserve near Olinda in QF22RC and the Old Coach Road north of Berwick in QF21QX presented an opportunity to "multiply" our Points score for the Multi Operator, 8-Hour Category by operating from two Grid Squares



VK3XPD / VK3KH Field Day Setup

*We both arrived at John's Hill Reserve at circa 1300 EDST. Although it was bright and sunny, it became immediately obvious that the gusty winds were going to be a problem for us.*

*Additionally, since our previous visit to this site, the Council has installed barriers to prevent vehicles from entering the grassed areas. This restriction made things a little difficult in that we were compromised in choosing the best "vantage" point for best/maximum Contest activity.*

*Over the next hour or so we progressively set our gear up with the aim of a proposed start at 1400.*

*During this time, Rob VK3ESE who lives nearby dropped in with his "very" portable station...an FT-817 on 6, 2 & 70 cm. After a bit of "banter", Rob left us and set himself up on a nearby Picnic table*

*Finally after a quick look around the bands, Michael was the first to start the contest with 6 metres through to 23 cm. To Michael's great surprise, one of the early contacts was Joe VK7JG on 2 and 6 metres from Launceston. The Geelong crew (VK3UHF) in the Barabool Hills west of Geelong seemed to be everywhere all at once! Along with the EMDRC team of VK3ER in the Wombat State Forest, the Frankston club of VK3FRC,*

*at Mt Martha, and the Ballarat Crew VK3AIG, things were looking pretty good. Noticeably quiet were several of the usual Latrobe Valley portable operators.*

*As usual the Microwave Bands were taking a little longer to set up - mostly due the high winds. Finally at about 1500, the Geelong crew of VK3UHF was rapidly worked on all Bands from 2.4 GHz up to 10 GHz. However, with the poor propagation, Microwave Stations further afield were quite difficult to find and work because the gusty winds made "pointing" the dishes a difficult process.*



Rob VK3ESE during the Spring VHF Field Day



Similarly, we had planned for longer distance QSOs on 2, 70, and 23 cm into VK1, VK2 and eastern VK3 but again we were to be disappointed due to the poor propagation on the day.

As the afternoon progressed and the initial urgency of as many QSOs on as many bands as possible abated, Rob VK3ESE visited us again after he had packed away his gear. Next in for a chat was Rob VK3LOL and later Peter VK3TPR dropped by.

Since John's Hill is a relatively popular vantage point with great views - there was also the usual tourist traffic walking the dogs or just out for a bit of a drive. Some would drop by for a chat so Michael, ever the diplomat, would explain what all the paraphernalia was. One unfortunate soul with "lady friend" in tow drove into the car park, turned towards us to get a better look but failed to notice a large red gum post. "Kerunch" was heard as he clipped the post and bits of a blinker assembly were scattered all around. Needless to say they departed soon after and we did not get the opportunity to explain what we were doing.

As the afternoon progressed, the temperature cooled significantly, the sky was threatening and the wind became even gustier. Charlie VK3NX was keen to try for a 24 GHz QSO. Not long after setting it up however, my 24 GHz transverter was blown onto the ground. Only minor damage was incurred but was it still on frequency?

So we tried again but unsuccessfully. A few minutes later, disaster struck. The tripod, dish and transverter were blown over again and this time the damage was terminal. The flexible waveguide was crushed.

Later in the afternoon and during a time of "repeat" 3 Hour QSOs, the wind blew over the 1200 mm Dish and Tripod with the 3.4 and 5.7 GHz transverter hardware attached. Amazingly, no damage was done.

The cold windy weather was taking its toll on both us and the gear. So with the failing light and with Michael complaining of numb fingers we decided it was time to pack up and relocate to the second Grid Square in Berwick. I was however not really looking forward to setting up all the Microwave gear all over again.

On arrival at Berwick, Michael was

able to park his car such that the now-tethered antennas mounted on a roof rack structure were pointing directly at Geelong. He then quickly worked the VK3UHF team on 2, 70 and 23 cm from inside the car. Easy!

Similarly, I had been thinking about the easiest way of getting these "repeat" Microwave QSOs with the minimum of effort. So, instead of the tripods and dishes, we set up the little card table for the transverters to sit on. The 2.4 GHz band was first off the rank. David VK3QM already had an "Ident" running, so I simply connected the 2.4 GHz feedhorn via a short length of coaxial cable to the transverter. Although it was pointing vertically up, I found the "Ident" immediately with S8 signal strength. Quite amazing - and this is Microwaves! The identical process was then repeated for the other microwave bands with great success.

With these "repeat" QSOs completed, we packed up and headed home for some well deserved creature comfort.

So, a very successful day, but we did come away with one definite plan for improvement. As on previous occasions, the gusty winds once again caused us considerable problems, more so on the Microwave bands with their vulnerable, tripod-mounted "wind catching" dishes. Multiple dishes for multiple transverters also means more effort and time is needed for setup and pack up. So, a rotatable dish securely mounted to the vehicle with a switchable multiband feed will be constructed.

## 2.4 GHz Activity

Several new stations are now set up to operate from home on the 2.4 GHz band. Ross VK3MY in Olinda, with an excellent takeoff to the west, is currently running 1 watt with plans for more power. Colin VK5DK in Mt Gambier has sorted out his antenna setup and is now also QRV on the band. During a recent opening, at 1307 Z on February 3rd, they successfully worked each other with 5x1 reports over a distance of 400 km.

Alan VK3XPD reports that the VK3RXX Beacon at Camberwell on 2403.530 MHz has been repaired and returned to service. It is running 10 watts into an Alford Slot at about 10 metres. He would be interested in any signal reports.

## 10 GHz Activity

Chas VK3PY reports on an impromptu 10 GHz Field Day of sorts. Sunday January 11th was a big day on 10 GHz in VK3. Prompted by a visit from Jack VK2TRF who was in VK3 on a work assignment and had brought his 10 GHz gear with him, a number of us obliged him by taking our 10 GHz equipment into the field to try to work him. And work him we did.

Jack set up his station at Loch in South Gippsland (near Korumburra). A number of VK3s, including a first-time operation led by Lou VK3ALB and Nik VK3NJP, took the opportunity of getting out into the field to welcome Jack on 10 GHz. Other operators who took part in activities were Charlie VK3NX, Alan VK3XPD, Ken VK3NW, Ralph VK3WRE, Russell VK3ZQB and Colin VK5DK and myself, VK3PY, with David VK3QM who had lent his gear out in anticipation of next weekend's contest and had to ride shotgun on my equipment. In all we had nine separate 10 GHz stations set up. Jack managed to work everyone other than VK3ZQB and VK5DK, both of whom were a little out of reach in the late afternoon heat. Had it been possible to continue into the evening, things might have been different.

Being somewhere near the middle of the geography, I was fortunate to work everybody. Seven QSOs (I will not count Charlie who was only about 500 wavelengths away...) and five grids on 10 GHz in one outing. Not a bad afternoon's haul. Most satisfyingly, Lou and Co. received a good introduction to microwave operation pending next weekend's Summer VHF Field Day.

From Wally VK6KZ: a check in November has confirmed that the VK6RST 10 GHz beacon at Mt Barker near Albany is operating but has drifted in frequency. Instead of the target frequency of 10368.564 MHz it was found on 10368.633 MHz. The beacon was heard over a 46 km path to Albany (well off the main lobe) at the QTH of Wally Green VK6WG. Please look for it when conditions are promising. The Bight has been bridged once - why not again?

Work is proceeding on corner reflector antennas to allow a 1296 MHz beacon to be placed on Mt Barker with major lobes towards the Eastern states and Perth.

## Technology Convention 2009

For anyone who might be in New Zealand in April, Technology Convention 2009 is being held in Hamilton over the weekend of April 11-12.

## Digital DX Modes

Rex Moncur - VK7MO

Welcome to Michael VK3KH, Nigel VK3GY, Tim VK3JJM and Rob VK3ESE who have all been trying out WSJT.

David VK2JDS provides an update on his activities with his solar powered EME station on 1296 MHz. "In December I worked Sergei RW3BP who was using 4 Yagis at -17 dB from Moscow, then again the next day using Sergie's 2.8m dish with -13. JT65c. The DXpedition to Namibia has stimulated a lot of activity on 23 cm EME with many stations active. 1296.065 has been the main frequency in use, 1296.090 was used by the DXpedition. So far I have worked stations from Russia, Switzerland, Czech Republic, Canada, Netherlands, Estonia, Austria and the Ukraine on JT65c. We need more operators on 1296. The world is looking for us. As an example, the contact with Christoph HB9HAL: He

The convention is about amateur radio related technology and is somewhat like our GippoTech event.

Registration Forms can be requested by email at [techcon09@nzart.org.nz](mailto:techcon09@nzart.org.nz)

They are looking for speakers/presentations/demonstrations for

durations of up to 45 minutes. Please contact Kevin Murphy ZL1UJG at [rfman@xtra.co.nz](mailto:rfman@xtra.co.nz) if you can help in this way.

Please send any Weak Signal reports to David VK3HZ at [vk3hz@wia.org.au](mailto:vk3hz@wia.org.au).

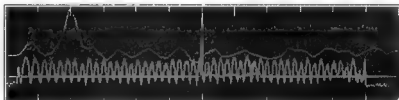
had gone on a mission to get a 'Worked All Continents' on 1296 digital JT65c and was keen for a VK station, I was it on 13 Jan 09 and he has now completed his WAC in less than a week! OK1DFC had me as his 60th digital contact on the 8 Jan. He designed the Septum circular feed many of us use on our dishes for EME."

It is possible to take advantage Aircraft Enhancement using JT65a as the Doppler shift is usually sufficiently low on two metres. The effect a tropo-scatter signal adding or subtracting in phase with the

Aircraft Enhancement signals produces a characteristic ripple on the green signal strength line of the WSJT display such as shown in the screen shot below of Jim VK3II's signal in Hobart.

This variation does not affect the ability of WSJT to decode the signals correctly and Aircraft Enhanced signals can be decoded on two metres with transmitter powers of around one watt on a 500 to 600 km path.

Please send any Digital DX Modes reports to Rex VK7MO at [rmoncur@bigpond.net.au](mailto:rmoncur@bigpond.net.au).



## The Magic Band – 6 m DX

Brian Cleland – VK5BC

January has proved to be another great month on 6 m with the band open somewhere in VK/ZL on all days of the month. During the month, Paul A35RK continued to make regular contacts into all states of VK & ZL and Willem DU7/PA0HIP had a good opening into the eastern States of VK.

VK6 enjoyed an excellent month with many openings to the eastern states and ZL, Paul A35RK again working into VK6 (over 7000 km) on 1st, 3rd and 4th January. Many days produced good ZL openings with some of the better openings occurring on the 2nd January when Kerry ZL2TPY worked VK6 ADI, ARA, AKT, OX and JR and on 22nd January when Rod ZL3NW worked the VK6 ADI, ZWZ, RO, RZ and JJ. On the 13th January Norm VK7AC worked VK6 JR, GL, JJ, HX, ADI and OX and the 24th January was also an excellent day with many VK6s working all eastern

states & ZL.

Openings in the eastern states occurred on most days and are too numerous to report with some short skip openings on the 1st, 2nd & 4th January with many VK3 to VK5 contacts being completed. ZL contacts were also regularly completed from all states with the band often open from VK5 to ZL as well as VK7 and VK2, the 1st January being particularly good.

Following the marginal opening on December 14th reported in last month's notes, a much better opening to Willem DU7/PA0HIP occurred on January 8th. Willem reports the opening started about 0425 UTC and lasted until about 0700 UTC with signals much stronger. QSB was very deep and quick; sometimes signals came out of the noise, rose to S9, to be back in the noise after 20 seconds or so. Signals from VK7 were the strongest - S9+++ at times. 31 different VK stations

were worked (some twice) as follows:

VK1DJA, VK1ZQR (QF44);  
VK2KIT (QF43), VK2BTS (QG60),  
VK2BA (QF69), VK2IF (QF68), VK2PB (QF49);

VK3AKK, VK3AMK, VK3GJW, (all in QF21), VK3DUT (QF33), VK3EK (QF32), VK3XQ, VK3JWZ, VK3CAT, VK3OP (all in QF22);

VK4SIX, VK4SDD, VK4AFC, VK4BEG (all in QH22), VK4ZDP (QH32), VK4CAG (QG62), VK4ABW (QH30);

VK5ZK, VK5NY (both PF94);  
VK7AC, VK7XX, VK7BBW (all in QE38), VK7ZIF (QE37);  
VK8RR, VK8MS (both PH57).

All stations (except VK7BBW) were worked on SSB.

Then on January 13, Willem heard VK8RR calling CQ and heard some other weak stations on SSB, but no QSOs resulted. Willem also reports that back

in November (24th) he heard ZL2AAA weakly, but also no QSO and is still waiting his first ZL and will probably have to wait until next season.

Good work Willem and thanks for keeping an ear out VK way, I am sure all VK and ZL stations eagerly look forward to working you next season.

Willem runs 100 W from an IC-746 into 2 x 5 element Yagis spaced 5 m apart. Picture on this page:

(Editor's note: We do recommend that amateurs do NOT climb towers unless the appropriate safety equipment is used.)

I received the following Email from Andrew 9V1TT:

*Have been reading your articles in AR for some time now. Keep up the good work.*

*I just wanted to touch base with you and let you know that I have commenced operation on 6 m in Singapore as 9V1TT. It has taken quite some time for the establishment of my station, and the approval for 6 m operation. As you will know Selva 9V1UV has been active for some time now, and I even worked him under my old call VK8AH from Darwin.*

*Like Selva, I have very limited conditions attached to my approval from the InfoComm Development Agency (IDA) that is the regulatory body in Singapore. I am only permitted 65 W ERP and operation between 50.0-50.2 MHz. This is quite a limitation, particularly in these poor conditions. Years ago (at*

*the last sunspot peak), I was able to work 5H1HK with 10 W and a dipole so I guess things will get better when conditions improve!*

*Although this limitation is significant, I guess it puts me in the same league as some beacons, so my commitment (as a dedicated 6 m operator) is to have the gear on when I am in the shack. Actually 6 m is my only real interest, so this will not be too hard. I am currently running an IC-7800, into a Cushcraft AR-6. I have a 3-el M2 that I will put up in due course.*

*I have a lot of work to do now. As VK8AH I had a 2 WL M2 (9-el) and 400 W. It took me a lot of years to get 6 m DXCC. I think it is going to be an even greater challenge now trying to get it with 65 W ERP! Currently there are only two operators (that I am aware of), Selva and me, that have privileges for 6 m. I am re-learning CW. Trying to build the speed up and will be operable on both SSB and CW. I will look out for you guys and I am in a position to QSL direct. Address is*



Willem and his Yagis

VBOX 882019, Singapore 919191.

*Let us hope we can get some good conditions so that I can make Singapore a reality for those that have not worked here yet.*

73, Andrew 9V1TT (VK8AH)

Thanks Andrew, great news for all VK 6 m operators. It's great to have stations from near neighbouring countries looking out for VK contacts which have proved to be very feasible in the bottom of the sunspot cycle.

Please send any 6 m information to Brian VK5BC at [bcleland@picknowl.com.au](mailto:bcleland@picknowl.com.au).

## Preliminary Notice

# GippsTech – Special Edition

## 1-3 May 2009

This year, the WIA Annual General Meeting will be held in conjunction with a special technical conference: GippsTech – Special Edition.

### Topics include:

- Lightwave communications (Rex Moncur VK7MO)
- Tropospheric Ducting: From Ross Hull to present understandings (Andrew Martin VK3OE)
- A new band: 137 kHz – an introduction to VLF communications (Drew Diamond VK3XU)
- Software Defined Radio – Principles and Practice (Phil Harman VK6APH)

- Am I really on frequency? Locking our radios to GPS references
- Beyond Foundation – the next step (Ron Bertrand VK2DQ) aimed at Foundation licensees

*The WIA Annual General Meeting will be held at Monash University Gippsland Campus, Churchill, Victoria. Tours of local attractions will be arranged – more news soon.*

Complete details will soon be available on the WIA website. Alternatively, register your request for an information pack with the WIA office.

## Silent keys

### Peter Page VK2APP

With the passing of Peter Page VK2APP, our hobby has lost not only one of its longest licensed amateurs, but one of its most enthusiastic members. Peter had many regular contacts on air and always had an excellent signal. His operating style was of such a high standard that we could all benefit by emulating him. Peter was licensed soon after the end of the second world war, perhaps 60 years ago and had been on most bands ever since.

He was born on his family property 'Stoneridge' at Young in southern NSW 81 years ago. He had lived there until a few years ago when he moved into the town of Young. His son Richard has since taken on the management of 'Stoneridge'.

Most of those who had contacts with Peter would not be aware that he did not have the benefit of his eyesight. Peter was born with infantile glaucoma and in the last 40 years had been completely blind. Despite his disability, he managed his large grazing and farming property with great skill and efficiency and found time to serve for a good many years on Young Shire Council. He represented that council on the electricity distribution authority and was its chair for some years.

In days gone by, Peter was an avid home brewer. He made all his own equipment in the days of 807s and carbon microphones and he maintained his technical interest and knowledge to the end. To our knowledge during the last two years he completed a screwdriver mobile antenna, complete with lathe turned thread for the coil (all his own work), at least one power supply and finally the complete restoration of an old oil engine. His 18.3 metre (60 foot) tower containing the TH6DXX was another engineering marvel being completely designed by him so that he could lower and raise it within 10 to 15 minutes of work. His excellent HF signal was testament to his design and installation work. He was greatly assisted in acquiring information, reading circuits and checking equipment by his wife Chris to whom he was married for 46 years.



Peter was always interested in the day to day running of amateur radio and was once a member of the Federal Executive of the original WIA and always took a great interest in VK2 Division matters, often attending meetings in Sydney. He was a member of several radio clubs, including the South West Zone of the WIA, NSW Division, later South West Amateur Radio Society, Mid South Coast, Parkes and Goulburn radio clubs.

Our deepest sympathies are offered to Chris and children Richard and Penny and their respective families. Their loss is great but a great many amateurs will miss Peter as well.

Vale Peter VK2APP SK.

Submitted by David Thompson VK2BDT  
and John Eyles VK2YW.

### Francis Michael (Mick) Barrow VK6FP

It is with regret we record the passing of Mick VK6FP on Dec 6, 2008. He was 87.

Mick had a very full life. He served for over five years with the Army including the Middle East, he was one of the Rats of Tobruk, and saw further action in New Guinea and Borneo before finally being discharged from active service.

He was qualified as a stationary diesel engine driver, and tried a few other occupations before spending 26 years as a Radio & TV Technician with Telecom.

In his retirement he devoted himself to his hobbies of amateur radio, computing, shooting with pistol, rifle and muzzle loaders, wine making and machining on both wood and metal lathes.

Mick used to worry over the demise of his hobby of amateur radio. When he knew his time to operate AR was coming to an end, he sold some of his equipment and gave the remaining gear to another amateur friend who is now assisting a young group interested in the hobby. The family knows Mick would be delighted that his gear is being well used.

Mick succumbed to dementia in the last two years. He is terribly missed by his wife Jean, four children and extended family.

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## Hamads classifieds

### WANTED ACT

•D/F indicator for receiver type R-1155, and Loop aerial type 3 or 4 with or without streamlined housing for same. Peter VK1CPK 02 6231 1790 or pkloppen@imetro.com.au

### WANTED NSW

•Crossed-needle SWR and Power meter eg DAIWA, type CN-620 or 720, or similar crossed-needle meter; must read low power, (eg 20 W or 50 W full scale). Keith VK2AXN QTHR 02 9449 3304, kandpa@bigpond.com

### FOR SALE VIC

•Crystal filter 10.7 MHz and IF converter xtal 10.245 MHz. These are new-old stock and were surplus to PHILIPS VHF radio manufacturing when it wasn't an option in Australia. Probably ideal for the FM transceiver featured in Jan/Feb 'AR'. I have 6 available. Price \$40 each, post free. Pete VK3IZ QTHR email jupete@bigpond.net.au

### WANTED QLD

•Circuit diagram for YAESU FT-7700 receiver. VK4ER QTHR.

### FOR SALE SA

•Still available VK5JST Antenna Analyser kits. (see AR article May 2006). Build yourself arguably the most useful item for your shack, and improve your HF antenna efficiency. For more details see <http://www.scarc.org.au>; contact SCARC PO Box 333 Morphett Vale SA 5162, or email: kits@scarc.org.au

•Metters mast triangular 36.5 m (120 ft, 6 x 20 ft. sec.) guy wires and ceramic base insulator, galvanised angle and ladder \$175 per 6 m (20 ft) section. HP Universal Counter 0-1 GHz model 5315A serial No 2032A05168 \$250 VK5AJR QTHR 08 8587 6242

### WANTED SA

•I would like to contact an experienced operator who is able to assist me to put up a full size G5RV antenna a concrete base is necessary to support one of the masts and a hammer drill required to put in Dyna bolts. I have the masts and the wire but need six white porcelain egg shaped insulators. I do not expect to get a major job such as this for nothing. If anyone can assist please phone me on 08 8294 6906 after 8 pm. Michael M. Gell VK5ZLC 3/18 Brighton Rd Glenelg 5045

### FOR SALE WA:

•Surplus to needs. KENWOOD TS-430S w/ narrow CW filter, \$600; YAESU FT-474 \$500, plus postage. VK6BE QTHR; Phone: 08 9841 4458

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**Amateur Radio Wiki**  
has been started and can be  
found at

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**We are looking for writers of articles  
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The intention is that it will become an  
online encyclopaedia for hams.

**Please log into the site, register and  
start writing!**

Tim Roberts VK4YEH QTHR.

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### National Office

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Bayswater VIC 3153

### Contact

Phone 03 9729 0400  
Fax 03 9729 7325  
10 am to 4 pm daily  
nationaloffice@wia.org.au  
http://www.wia.org.au

### News Bulletin Schedule

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Contact [nationalnews@wia.org.au](mailto:nationalnews@wia.org.au)  
National VK1WIA news is distributed to all states.

## Advisory Committees

*Chairman of the regional committee is in bold*

### New South Wales & ACT

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Peter Rumble VK2IY/VK4KX

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Alan Baker VK8ZAB  
Trevor Wardrope VK8TJW  
Wayne Cockburn VK8ZAA

## Broadcast details

**VK1** VK1WIA: Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.

**VK2** VK2WI: Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147.000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning.

Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.

**VK3** VK1WIA: Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.130, 147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 438.075 VK3RMU Mt St Leonard.

**VK4** VK1WIA: Sunday 0900 local via HF and major VHF/UHF repeaters.

**VK5** VK5WI: Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975

**VK6** VK6WIA: Sunday 0900 local, on 1.865, 3.582, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120, 50.150, 146.700 and 438.525 MHz. Country relays on 3.582 MHz and major repeaters.

Repeated Sunday, 1900 local, on 1.865, 3.565, 146.700 and 438.525 MHz. Country relays on major repeaters.

Also in 'Realaudio' format from the VK6WIA website.

**VK7** VK7WI: Sunday 0900 local, on 1.840 AM and 3.570 MHz and on major repeaters.

VK7 regional news follows at 0930 local, on 7.090 and 14.130 MHz, and on major repeaters.

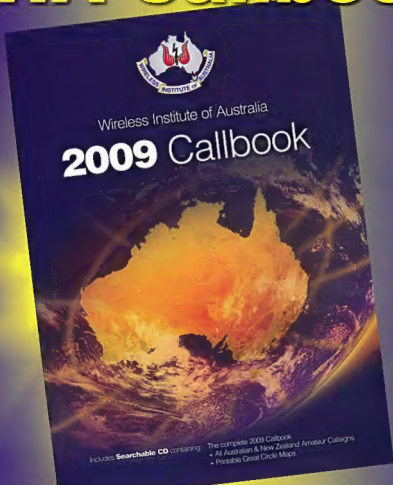
**VK8** Sunday 0900 local, on 3.555, 7.050, 10.130 and 146.900 MHz.

**Note that many clubs broadcast the WIA News via local VHF and UHF repeaters. Check the News section of the WIA website.**

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